

How internal audit can champion continuous monitoring in a business operation via visual reporting and overcome barriers to success

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Abstract. Many auditing professionals would contend that continuous monitoring is a function of management and not internal audit. However, effective continuous auditing is highly dependent upon a strong continuous monitoring system. Further, by integrating technology of these two systems, continuous assurance can be achieved, and audit efficiency and effectiveness can be improved through the reduction of costs and effort. This paper discusses how internal audit can collaborate with a business operation to develop a continuous monitoring application utilizing visual reporting and overcome the potential barriers to success. The specific business operation selected for modification was the procurement card program at a large public university. Following an introduction of the scenario, an overview of the ProCard™ program is provided, highlighting the program risks and controls. Third, a four-phased approach used to develop the continuous monitoring tool is described, including specific steps taken to ensure effective use of the real-time data by auditors. Fourth, challenges the internal function encountered when implementing the system are described, including how those challenges were addressed. Fifth, the paper provides concluding comments and future initiatives planned. Finally, the paper provides additional examples for continuous auditing and monitoring and suggests future research topics in this area.

Keywords: Continuous auditing, continuous monitoring, visual reporting, internal audit, procurement card.

1. INTRODUCTION

While it is uncommon for the internal audit function to champion a continuous monitoring project, such a project can enhance the capability of the internal audit function to fulfil its primary purpose. This paper describes the rationale and process undertaken to implement such a project, including why the internal audit function chose visual reporting and how the staff obtained the knowledge and skillset to build a continuous monitoring application. The specific case reported explains how the Internal Audit Department of a large public university implemented continuous monitoring in a business operation by utilizing visual reporting while overcoming common barriers to a successful implementation. The efficiencies and improvements obtained by the collaboration are also discussed.

1.1. The Relationship Between Continuous Monitoring and Continuous Auditing

Many auditing professionals would argue that continuous auditing is a function of the internal audit function and that continuous monitoring is a function of operational units or even the information technology department. Therefore, it is beneficial to elucidate the differences and similarities amid continuous auditing and continuous monitoring, as many people confuse the terms. The main differences between the two terms center on purpose and responsibility of the process. The Internal Audit Department is responsible for all internal audits and audit functions, which includes testing the design and operation of internal controls. One of the expectations of an internal audit is to provide ongoing assurance and timely feedback on risk and control issues to company management. Continuous auditing is a methodology that encompasses any technique or process employed by auditors to conduct nonstop auditing (Warren & Smith, 2006); these procedures are performed concurrently or in a brief period immediately following the event that triggered the audit (Canadian Institute of Chartered Accountants - CICA, 1999). The company's upper management is responsible for the continuous monitoring that provides oversight of the effectiveness of internal controls. Overall, upper management is liable for the implementation, enforcement, and monitoring of internal controls while the Internal Audit Department (under the Chief Internal Auditor) is responsible for examining the application and function of the internal controls. Irrespective of the differences between these two functions, each serves to regulate and monitor by analyzing real-time data compared to a predetermined

collection of rules (Hillo & Weigand, 2016). Alles et al. (2006) argue that continuous monitoring and continuous auditing are inseparable in financial processes.

Continuous auditing systems can be readily adapted to incorporate continuous monitoring systems. Cangemi (2010) believes that the internal audit function is well-positioned to identify potential areas for continuous monitoring, which offers many benefits. According to Deloitte Development LLC (2010), continuous monitoring is a continuous, systematic process that empowers administrators to: “(1) assess the effectiveness of controls and detect associated risk issues; (2) improve business processes and activities while adhering to ethical and compliance standards; (3) execute more timely quantitative and qualitative risk-related decisions; and (4) increase the cost-effectiveness of controls and monitoring through IT solutions.” If internal auditors can rely on the continuous monitoring and reinforcement of a process by management, then testing of that specific area can be reduced and focus shifted to other areas that have not implemented constant monitoring. By integrating continuous auditing with incessant monitoring, a higher level of assurance can be achieved (Verver, 2017) and audit efficiency and effectiveness can be enhanced through the reduction of both costs and audit effort (Majdalawieh et al., 2012).

Continuous monitoring is no longer restricted to tabular reports or spreadsheets that must be analysed further. Visual reporting, when utilized as a constant monitoring technique, helps management gain immediate, valuable insights into their data through charts, maps, graphs, and dashboards. Also, with visual reporting technology, the user can gain a broad picture of the data while having the ability to immediately interact with the data and drill down into the detail when needed.

1.2. Scenario

The University Internal Audit Department identified one of its weaknesses to be a lack of data analytical skills, which is not uncommon in other organizations. Training audit personnel to be able to utilize analytical procedures is critical to effectively performing continuous auditing by uncovering anomalies and trends (Hoffer, 2007). Over three years, Internal Audit developed a data analytics technology strategy to overcome this weakness. Part of that strategy included the hiring of a consultant to train eight staff members; the staff were introduced to visual reporting. Over time, internal audit management determined that value could

be added to the rest of the university community by advocating the development and implementation of continuous monitoring applications in certain business units.

Internal audit leadership knew that it would need to choose an area that resulted in a “win” in the first implementation so as not to discourage the use of continuous monitoring in other business units. When selecting a business process or operation to consider for this project, department leaders wanted a business process that would be more straightforward than some of the more complex processes, e.g., payroll or billing, and a collaborative business unit that would be receptive to this project. The University Materials Management Section, which is responsible for the procurement card program (hereafter referred to as ProCard™, sometimes referred to as P-card), was approached with the idea of having their compliance officer work with internal audit to develop a visual reporting tool to monitor the usage and compliance with ProCard™ policies.

2. OVERVIEW OF THE PROCARD™ PROGRAM

The ProCard™ is a corporate Visa credit card that is for business use only. The program¹ was implemented to reduce documentation volume and processing cost and to allow for a more efficient purchase of small-valued services and goods. Figure 1 represents the process flow of the university’s ProCard™ program. To apply for a ProCard™, university employees must receive approval from their dean or department head, attend a training session, and sign a card use agreement before they can use the ProCard™ assigned to them. Although the ProCard™ is in the employee’s name, the liability rests with the university instead of the individual cardholders. Specific vendors are selected via a bidding process.

2.1. ProCard™ Program Risks and Controls

Because purchases are reviewed after-the-fact and have a greater likelihood of misuse and policy abuse, the ProCard™ program is considered a high-risk area where preventative controls may have more impact than detective and corrective controls.

¹ The ProCard™ program is not unique to the University as many organizations have implemented a procurement card program. Further information on procurement cards can be found at www.napcp.org.

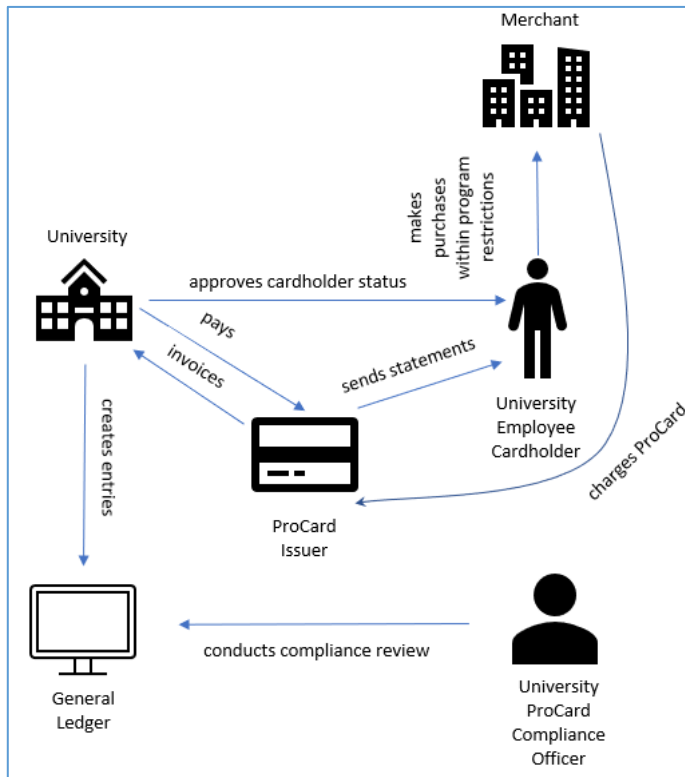


Figure 1. Process Flow of the University's ProCard™ Program – adapted from NAPCP²

To reduce the risk of misuse, an organization can implement preventive controls, e.g., conduct background checks when employees are hired and periodic post-employment background checks; maintain a clear chain of command identifying roles and responsibilities; educate employees on policies and procedures; set dollar limits on daily and monthly transactions; restrict purchases by merchant category codes (MCCs)³; prohibit multiple purchases from the same vendor within a period; and enforce compliance via a disciplinary process for noncompliance. Failure to follow the policies and procedures and repeated abuse by a cardholder should result in disciplinary actions such as revoking the ProCard™ or prosecution when fraud has occurred. Detective controls that can be employed are the reconciliation and review of documentation by someone other than the cardholder, daily and monthly assessments by the ProCard™ compliance officer, and the launch and regular check

² For more information, see "How P-Cards Work." at <http://www.napcp.org/?PCardProcess>.

³ MCC is a system of four-digit codes that is used by credit card companies to distinguish a merchant's principal trade, profession, or line of business. For example, the MCC Code 4900 represents utilities. <http://mcc-codes.findthecompany.com/>.

of an anonymous tip line. Incorporating such preventive and detective controls allows for a strong continuous monitoring system to serve as an effective fraud deterrent, especially since it allows for early notification of potential fraudulent activity (Gonzalez & Hoffman, 2018). Even with these internal controls in place, there is the risk of cardholders using the ProCard™ for personal gain such as gas for a personal car, household items, utilities, and gift cards. For instance, former West Virginia Supreme Court Justice Loughry was found guilty of personal use of state fuel cards (Klein, 2019). Therefore, the use of data analytics to provide insight into the types and number of purchases by cardholders and departments, as well as monitoring for questionable purchases, is paramount.

2.2. ProCard™ Program Restrictions

For internal control purposes, restrictions were implemented by the university. One of the controls is limiting the dollar amount an employee can spend on a single transaction, daily transactions, and monthly transactions, which reduces the risk of total dollars that can be spent. Spending limits (or levels) are determined by the employees' supervisor. Table 1 shows the categories of the university's spending levels. If a special situation arises and the spending level is too low, materials management is contacted to ascertain whether to allow the transaction to be processed.

Spending Levels			
	Single Limit	Daily Limit	Monthly Limit
Level 3	\$1,500	\$3,000	\$10,000
Level 4	\$2,500	\$5,000	\$15,000
Level 5	\$5,000	\$10,000	\$25,000
Level 6 (port only)	\$1,500	\$3,000	\$10,000
Level 7 (port only)	\$5,000	\$10,000	\$25,000

Table 1. ProCard™ Spending Levels for Cardholders. Source: Authors

Another restriction stipulates that employees are not allowed to split⁴ transactions to circumvent the spending limit policy. However, some purchases are not considered split transactions, such as registering multiple employees for the same conference or buying multiple airline tickets.

⁴ For example, an employee has a limit per transaction of \$500; the total purchase of items from a vendor on the same day is \$600; the purchase is split into two transactions for \$300 each to stay under the spending limit.

The university, to the extent possible, has restricted certain merchant category codes (MCCs) such as alcohol beverage stores, pawnshops, and gaming establishments. Nonetheless, with some vendors selling multiple products, it is often difficult to block certain purchases. Different levels of transaction data (hereafter referred to as data levels) can be captured and transmitted to the university; however, not all vendors elect to capture and provide the level of detail that is needed. The loss of data is due to the type of point-of-sale system or technology utilized by the vendor; it also determines what data is captured and ultimately transmitted. In some instances, detailed hard-copy receipts must be reviewed to see line-item detail such as product code/item number, quantity, description, etc. In order to provide additional documentation clarifying the transaction, cardholders are required to enter information on purchases⁵ in a comment field to explain the business purpose and purchase details.

Each one of these controls represents a risk that needs to be monitored to detect a violation. Prior to the implementation of the continuous monitoring application, the ProCard™ compliance officer had to review tabular reports produced from the Works®⁶ application, which was time-consuming and inefficient for some reviews.

3. DEVELOPMENT OF THE CONTINUOUS MONITORING TOOL

The approach used to develop the visual reporting tool to be utilized by the ProCard™ office for continuous monitoring and data insight consisted of the four phases shown in Table 2, and includes the amount of time spent on each phase by internal audit. In total, internal audit spent approximately 332 hours on the project.

3.1. Planning Phase

During the planning phase, the internal audit project leader gathered background information on procurement card programs in general and researched information available on utilizing data analytics for reviewing ProCard™ transactions.

⁵ For example, if purchasing gift cards from Wal-Mart to give to participants involved in a research study, the cardholder would enter the name of the research study.

⁶ Works® is a Web-based electronic card payment management application that allows for the management of purchasing card transactions.

Phase	Percentage of Time Spent
I. Planning	35%
II. Obtaining and Understanding the ProCard™ Data	10%
III. Developing the Continuous Monitoring Application	50%
IV. Turning the Project Over to the User	5%

Table 1. Development Phases and Percentage of Time Spent by Internal Audit

Research shows there is a strong influence of management support and advocacy on successfully implementing applications that support continuous monitoring and continuous auditing (Adesina et al., 2016; Mainardi, 2011; Soedarsono et al., 2019; Vasarhelyi et al., 2012). Hence, an initial meeting was held with materials management personnel to secure collaboration on the project. The project leader explained the purpose of the project, and a subject matter expert (SME) was identified, which was the ProCard™ program compliance officer. During this meeting, the project leader obtained preliminary information such as the number of cardholders, what types of reviews were currently being performed, and the process used to complete the analyses to best determine the data needed.

A subsequent meeting was held by the project leader to brainstorm on potential tests that could be conducted and to identify questions or items that still needed to be addressed. This meeting included the SME, a consultant⁷, management members familiar with the continuous monitoring system's capabilities, and some of the internal audit staff. During the brainstorming session, the project leader reminded group members to not limit their suggestions because they assumed the data was unavailable, the test could not be performed, or the question could not be addressed.

3.2. Obtaining and Understanding the ProCard™ Data Phase

ProCard™ transactions are managed through Works®, which is an online software solution provided by the bank utilized. The ProCard™ administrator gave the project leader access to the Works® system by setting up a login account. The project leader downloaded the data needed into an Excel spreadsheet and worked with the consultant and SME to further understand the data. The review suggested

⁷ Internal Audit obtained the services of Visual Risk IQ as part of its data analytics strategy. More on Visual Risk IQ will be discussed later in the paper.

that some data attributes needed to be standardized, such as vendors' names.

When merging the use of data between two or more departments or areas, certain items should be standardized such as vendors' names, account numbers, and addresses. In some instances, a vendor may be in the system under several different names. Rather than having a balance presented for each version of a vendor's name, all transactions through that specific vendor should be combined and presented under one balance. For example, the vendor name for Wal-Mart may sometimes be Wal-Mart or Wal-Mart Superstore. Hence, all transactions that were made through any version of the Wal-Mart name were combined to be presented as one balance for Wal-Mart. A similar process was used for vendors' account numbers and addresses.

These deliberations also uncovered different data levels that could be captured and transmitted depending on the point-of-sale system and technology utilized by the vendor. Table 3 depicts the data levels.

	Date	Supplier	Transaction Amount	Sales Tax	Customer-Defined Code	Line-Item Detail
Level I Standard	✓	✓	✓			
Level II Variable Data	✓	✓	✓	✓	✓	
Level III Detailed Data	✓	✓	✓	✓	✓	✓

Table 2. Levels of Transaction Data for ProCards™ Source: NAPCP⁸

It should be noted that the quality and completeness of line-item detail data can vary depending on the vendor. For instance, a transaction that has "Level III Detailed Data" might have many line-items depending on what was purchased. Not all data has the Level III detail, but for the transactions that do, the data needs to be parsed or separated by each line-item.

The consultant utilized the structured query language (SQL) to standardize the data for vendors' names and deconstruct the transactions into Level III detail. However, the project leader needed a way to sustain this project without having to rely on the consultant. A meeting was held with the university's information technology group. It was determined that a database would be set up on a SQL server, and scripts were to be run to standardize and parse the data before it was loaded into the continuous monitoring application.

Many have heard the saying, "garbage in, garbage out" (Search Software Quality,

⁸ "Levels of Transaction Data". For more information, see <http://www.napcp.org/?page=LevelsofData>.

2008). Results of continuous monitoring and continuous auditing are dependent upon the quality of the available data (Chan & Vasarhelyi, 2018; Kuhn & Sutton, 2010; Soedarsono et al., 2019). Hence, the data must be accurate and complete. Control balances were obtained from the SME and compared to the extracted data to confirm it was correct. Once the data was obtained, standardized, and evaluated for completeness and accuracy, the project leader developed the continuous monitoring application.

3.3. Developing the Continuous Monitoring Application Phase

The project leader utilized Tableau⁹, a software tool, to build a continuous monitoring application for ProCard™ transactions in the form of a storyboard¹⁰. The application was designed to allow a user to (1) select an item from a list of questions that best describes the desired action and (2) to monitor the data for policy abuse and personal purchases. Figure 2 shows part of the storyboard built for this application.

The storyboard offers users a variety of items, in a question format, for selection (Refer to Table 4 for the list of questions). First, a user selects the question to which they want a response and the system displays a visual for further review. The application is interactive allowing the user to review different data levels and apply data filters, including searching for keywords such as “gifts.” Examples of the continuous monitoring application are presented as screenshots in Appendices 1 through 13. Cardholders’ names are redacted from the screenshots to maintain personal privacy.

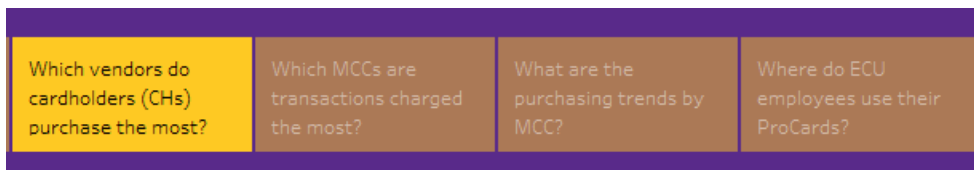


Figure 2. Storyboard for ProCard™ Continuous Monitoring Application

⁹ Tableau is a business intelligence software that allows a user to explore and perform valuable analysis of data. Further detail of why this software was selected is discussed in the last section of the paper.

¹⁰ In Tableau, a storyboard is a sequence of visualizations that is used to together to tell a story about the data and provide context where needed.

No.	Questions
1	Which vendors do cardholders (CHs) purchase the most?
2	Which MCCs are transactions charged the most?
3	What are the purchasing trends by MCC?
4	Where do employees use their ProCards?
5	What are the purchasing trends by vendor zip?
6	What are the purchasing trends by cardholders by total amount?
7	What are the purchasing trends by cardholders by number of swipes?
8	What purchases are the cardholders making ?
9	Are cardholders using preferred vendors?
10	Do the transactions follow Benford's Law?
11	Do transactions by MCC follow Benford's Law?
12	Are cardholders with a \$1,500 transaction limit splitting transactions?
13	Are cardholders with a \$2,500 transaction limit splitting transactions?
14	Are cardholders with a \$5,000 transaction limit splitting transactions?
15	Are departments splitting transactions among multiple cardholders?
16	How are purchases divided amongst the days of the week?
17	Which cardholders are making purchases on the weekends?
18	Have transactions posted to blocked MCCs?
19	Have transactions posted to questionable MCCs?

20	Are any vendors used by only one department? One only one cardholder?
21	Do cardholders have a low number of transactions with high dollar amounts?
22	Are there round dollar transactions?
23	Are cardholders making purchases at local vendors?
24	What transactions have posted using top key words?
25	Have questionable items been purchased?

Table 3. Questions Answered Through the Storyboard

The continuous monitoring application was designed to provide management with valuable insights into the data that was not readily available in the old system. Appendices 1 through 5 provide screenshots of the ways in which management can now view purchasing trends to make better business decisions, such as pursuing better prices on certain goods and services. Appendices 6 through 13 present screenshots of processes management can use in the application to monitor compliance with the ProCard™ policies. For example, cardholders should not split transactions to avoid spending limits. Appendix 6 shows a screenshot of the process used when the user monitors for split transactions by cardholders with a spending limit of \$1,500. Prior to the implementation of the continuous auditing-monitoring tool, the user reviewed multiple tabular reports to assess ProCard™ transactions for split transactions. Now, the user immediately sees possible split transactions and can sort through the data for further details. This process not only results in a reduction of the time (and cost) it takes to monitor for split transactions but immediately identifies potential cardholder abusers¹¹.

Another area that needs to be monitored for compliance is ensuring cardholders are using preferred vendors for certain purchases. The University is a state entity and must utilize certain vendors for specific types of goods and services that are purchased because the vendors are on state contract. Before the implementation, the user had to manipulate numerous reports in Excel to determine if certain goods and services were purchased on state contract. In the current system, the user can

¹¹ Potential future fraudsters periodically test systems and their boundaries for weaknesses and enforcement of compliance sometimes for years before actually perpetrating a fraud (Albrecht et al., 2016).

employ the continuous monitoring application and instantly see if cardholders are using preferred vendors. Appendix 7 contains a screenshot of how the user can monitor for compliance with cardholders using preferred vendors. Additionally, the user can choose from a drop-down menu of the types of goods and services that are on State contract.

Because ProCards are considered high-risk, management should also monitor for personal purchases. Appendices 8 through 13 provide screenshots of the application in action when monitoring for personal purchases. Previously, the user would have to manipulate and review multiple tabular reports to evaluate purchase data for suspicious transactions. Also, internal auditors would have to request hard copies of ProCard™ statements and receipts and manually review them for suspicious transactions. With the current system, auditors can utilize the continuous monitoring application to review for suspicious transactions; the application also helps with the investigation of allegations received involving misuse of university resources. Another benefit of this continuous monitoring application is that the internal audit leadership can employ it to assess for acquiescence with the Fair Labor Standards Act, which mandates that non-exempt employees be paid or receive comp-time of one and half hours for time worked over forty hours in one week. By reviewing purchases made on weekends, internal auditors can compare this to the timekeeping system to determine if non-exempt employees have correctly recorded their work time.

Financial services also utilizes the continuous monitoring application to identify cardholders who have purchased gift cards to ensure the cardholders have registered with materials management to buy gift cards. In the old system, financial services would have to manually review ProCard™ statements and receipts. In the new setup, they utilize the continuous monitoring application to perform a search for the word “gift” to identify potential gift card purchases.

3.4. Turning the Application Over to the User

Once the project leaders and SME were confident the data was acceptable and the tool was meeting the needs of the end user, the application was turned over to the user. However, internal audit’s role did not stop once the tool was fully implemented. The project leader developed a list of roles and responsibilities and obtained agreement among all parties involved. See Appendix 14 for the specific roles and responsibilities of internal audit, materials management, and information

technology regarding the continuous monitoring application. Internal audit spends approximately one to two hours a month maintaining the continuous monitoring application for materials management.

4. OVERCOMING THE CHALLENGES

As with any project, there are going to be challenges that need to be addressed. The most common challenges include management cooperation, affordability and usability of data analytical tools, obtaining and understanding data, and sustaining the continuous monitoring application.

4.1. Management Cooperation

One common challenge is finding a user who is interested and supportive of the project. In this instance, the user was willing to collaborate on a continuous monitoring project but did have some reservations or apprehension about how this application would replace the tabular report review. Internal audit leadership suggested that the tool not replace the tabular reports but rather complement them until the end user was more comfortable with the continuous monitoring application. To ensure a successful system development and implementation, the project's end user must be included in the project, from beginning to end, and continuously share the feedback and output. Additionally, inclusion gives the user ownership and some control over the project increasing the likelihood of project success.

While the project is being planned and developed, the final user should be trained on navigating and effectively using the new tool. Initially, the user felt overloaded with information and overwhelmed by the entire storyboard. To ease the transition, the project leader suggested that the user start by selecting one of the questions in the storyboard. The user chose the split transaction question, "Are cardholders with a \$1500 transaction limit splitting transactions?" and compared the application's results to the tabular report that was previously utilized to check for compliance. When using tabular reports from Works®, the user had to review multiple reports to complete the task: one report was evaluated for potential split transactions and another report was reviewed for transaction details. By using the storyboard in the continuous monitoring tool, the user had immediate access to the split-transaction data and could select options to see further details. Instantly, the user realized the continuous monitoring tool was much more efficient than reviewing many tabular

reports. See Appendix 15 for comments provided by the user regarding the continuous monitoring tool.

4.2. Affordability and Usability of Data Analytical Tools

The affordability and usability of data analytical tools can be crushing to small internal audit units. They may not have the budget to buy the necessary tools or capable personnel to operate the tools. Some internal audit functions do not know where to start. So, rather than jumping into a project, it is helpful to plot out a data analytics and technology strategy and get cooperation from senior administrators who control the budget. Internal audit is deemed a trusted advisor in the university and has the support of senior management, so the initial funding for this project was not an issue. Also, internal audit took the opportunity to demonstrate to senior management and the board of trustees the success stories of utilizing data analytics in the department, which was key to obtaining further funding for a data analytics program.

Rather than have one subject matter expert in the internal audit function, it was decided that the entire audit staff be required to use data analytical tools. Since the audit staff was comfortable using Excel, the ActiveData¹² plug-in was purchased for all staff members and in-house Excel training for data analytics was provided through AuditNet¹³ webinars. From there, the internal audit department partnered with Visual Risk IQ¹⁴ to provide training and support for its data analytics program. Visual Risk IQ introduced its QuickstartTM methodology, which was adopted by the internal audit department for its projects. The five phases of this methodology are: (1) brainstorm, (2) acquire and map data, (3) write queries, (4) analyze and report, and (5) refine and sustain. Instead of relying on the traditional approach to building an audit program for assurance and consulting engagements, the internal audit department now starts with brainstorming and asks, “What question(s) do we want to answer?” After responses to these questions are developed, a determination is made as to the data level that is needed, whether it can be obtained, and the

¹² ActiveData for Excel is a plug-in for Microsoft Excel that has advanced data analytical tools. <http://www.informationactive.com>

¹³ AuditNet is a subscription based service that provides resources for auditors. www.auditnet.org

¹⁴ Visual Risk IQ is a services and software firm that helps people see and understand their data. They primarily serve internal audit and compliance professionals, and provide data analytics consulting, implementation, and education. www.visualriskiq.com For more information about the QuickstartTM methodology, visit <http://www.visualriskiq.com/vriq-for-internal-audit/>.

location of the data supply. Then, queries are written to answer the questions, and the results are analyzed and reported.

While working with Visual Risk IQ, they introduced internal audit to the concept of visual reporting and, specifically, to the visual reporting tool Tableau. After working with Visual Risk IQ on several projects, internal audit management determined that visual reporting could be utilized for continuous monitoring for some of the business operations.

4.3. Obtaining and Understanding the Data

Obtaining and understanding the data is probably the most frustrating part of utilizing data analytics. There are times when the internal auditors identify what is wanted and how to do it, only to find the data is unavailable or the ERP system cannot be comprehended without an SME. Also, data owners are sometimes reluctant to release the data due to security concerns. Unless the internal audit department has the user and the SME's buy-in on the project, it is doubtful the project will be successful.

Internal audit can sometimes retrieve the data from data warehouses; however, often they must rely on SMEs to obtain data that is not stored in a data warehouse. It is not unusual to run into scheduling conflicts and have to work around the SME's schedule. Sometimes, data dictionaries are non-existent or lacking in explaining the fields. For this project, the data was straightforward and easily obtainable; however, this has not been the case in other projects. Internal auditors must have tenacity, perseverance, and not give up when trying to obtain the data but also be flexible and work with other employee's schedules.

4.4. Sustaining the Application

After a continuous monitoring application is implemented, it must be sustained. To maintain an application, generally, personnel from different areas have to be involved. For this continuous monitoring application, personnel from the internal audit, materials management, and information technology departments agreed to specific roles and responsibilities (see Appendix 14 for a list of specific roles and responsibilities). Internal audit also should contact users at least once a month to learn if any modifications are needed and to ensure the business unit is still using the application.

4.5. Concluding Comments and Future Initiatives

Overall, this was a very successful project. Further, it demonstrates the role that internal audit can play regarding continuous monitoring. Nonetheless, to be successful, internal audit must be seen as a trusted advisor since implementing a continuous monitoring tool is not just about the technology but is also about securing commitment, reinventing processes, and changing organizational behavior. By integrating continuous auditing and continuous monitoring, a more robust process for compliance monitoring can be established for high-risk business processes.

In this case, the continuous monitoring application reduced the time required to review ProCard™ transactions for compliance with policies and improved risk and control assurance. Besides being an effective tool for materials management, the application helped internal audit decrease the time involved to conduct a fraud and abuse investigation when an allegation is received about the personal use of a ProCard™. Moreover, internal audit management uses the tool to ensure compliance with the Fair Labor Standards Act (FLSA) by reviewing weekend purchases and reminding management that if non-exempt employees purchase goods on the weekend, the employees must be paid for their time. Financial services found the continuing monitoring application to be effective in monitoring for compliance with gift card policies. Other business units have recognized the success of this project's implementation across the university and the internal audit department is now working on continuous monitoring applications for accounts payable and dental medicine revenues.

5. ADDITIONAL EXAMPLES AND FUTURE RESEARCH TOPICS

Other areas ripe for continuous monitoring that are also considered at-risk areas include asset management and payroll. Typically, these two areas are the greatest areas of cost for an organization and can quickly become problematic if not adequately observed.

Implementation of continuous monitoring of assets, combined with continuous auditing, may improve not only the cost of maintaining assets but an entity's asset management bottom line. For instance, if a specific brand or model of work laptop has a high percentage of problems and early replacement, this information will assist management in identifying areas where another laptop brand or model may

be better suited, improve employee efficiency, and lower costs related to the increase in replacements. Poor monitoring can result in the loss of thousands of dollars or more. For a number of years, the State of West Virginia's Fleet Office insured around 12,000 vehicles, but after a three-year investigation, discovered that the state only owns 8,380 vehicles (Reyes, 2019). Continuous monitoring would have detected the problem and prevented future issues if it had been applied.

Continuous monitoring in the functional area of payroll will assist managers in quickly identifying employees who may have over- or under-reported work hours and unauthorized overtime. These dimensions of payroll often require auditing follow-up and thus could benefit from continuous monitoring. In one recent case, *Furry v. East Bay Publishing* (2018) cited the failure of an employer to maintain accurate employee work-hour documentation. A California appeals court ruled in favour of the former employee that imprecise evidence provided by an employee provided a sufficient basis for determining damages, and awarded the plaintiff with the contested overtime pay.

In a case that demonstrates the power of good policies, procedures, and time documentation, *Jong v. Kaiser Foundation Health Plan* (2014), a California appeals court ruled in favour of Kaiser. The court refused to hold the company liable since Jong did not provide evidence that Kaiser knew he completed overtime hours, a necessary legal requirement to prove "working off the clock." Such court findings signify the importance of maintaining accurate time records as required by state and federal law. Furthermore, COVID-19 has caused upheaval of work patterns and recent changes in laws, i.e., the Coronavirus Aid, Relief, and Economic Security (CARES) Act (2020), has cast the need for internal controls over an already inherently high-risk process into the forefront. Currently, little is known about the impact of the pandemic, but it will be studied and impact research for many years to come.

There are two additional areas of continuous monitoring where more research is needed. First, the use of continuous monitoring is only going to increase as the business environment evolves in response to the mass retirements of the baby boomer generation and the increase in technology use such as that caused by the recent pandemic. Additional research is needed to examine the use of continuous monitoring applied to the adoption of the Europay, Mastercard, and Visa (EMV) chip; as usage increases and the capability of EMV chips evolve, organizations will

have access to more data and further control over ProCard™ purchases by implementing restrictions through the smart chip. Second, as the use of continuous monitoring and asset management increases, future research should examine the role of continuous monitoring in decreasing asset and related maintenance cost.

6. EDUCATOR USE OF THE ARTICLE

To encourage further use or discussion of this case in a course, instructors can utilize one of the following options:

- 1) Ask students to identify other areas within the business environment, and related to a specific course topic, that may benefit from the application of continuous monitoring. Additional discussion may include the process for the implementation.
- 2) Ask students to identify events in the news, which are similar to those provided in this article, and to identify internal control weaknesses that may be mitigated through continuous monitoring.
- 3) Prior to introducing students to Tableau, SQL, or similar programs, instructors can ask students to read the article and to identify information that should be incorporated into the specific program during the development phase.
- 4) First, ask students to identify preventative and detective controls in the paper. Second, ask students to research for news articles and legal cases in which internal controls were an issue. Finally, have students develop preventative and detective controls that could have been implemented to have corrected the internal control weakness.

These options are to assist instructors in using the article and free online resources towards developing students' applicable knowledge on internal controls and continuous monitoring.

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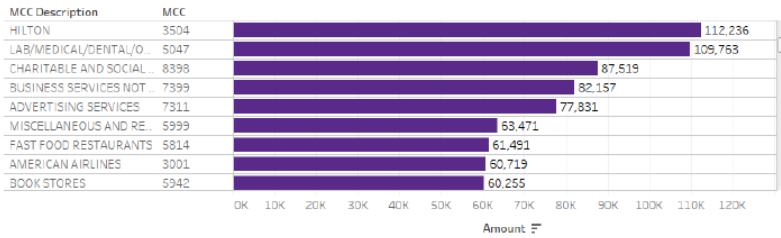
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Appendix 1. What are the purchasing trends by MCC?

Which vendors do holders (CHs) chase the most?	Which MCCs are transactions charged the most?	What are the purchasing trends by MCC?	Where do ECU employees use their ProCards?	What are the purchasing trends by vendor zip?	What are the purchasing trends by CH by total amount?	What are the purchasing trends by CH by # of swipes?	What are the purchasing trends by CH by # of swipes?
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Purchases by MCC for the Statement Period in Review

Click the purple bar to view the MCC trend data below.



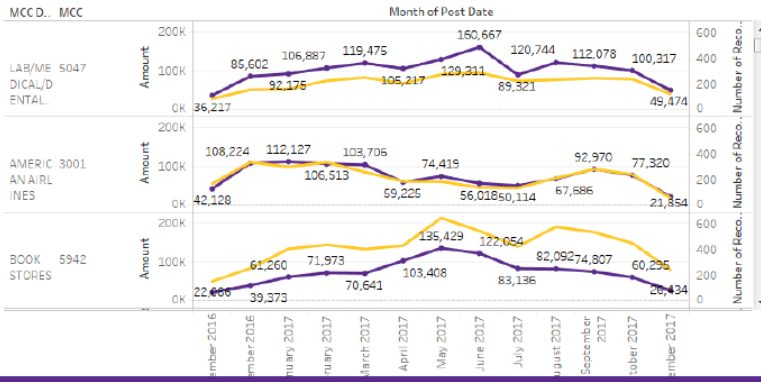
MCC

MCC Description

Measure Names

- Amount
- Number of Records

Trend Data for 12-Month Rolling Year

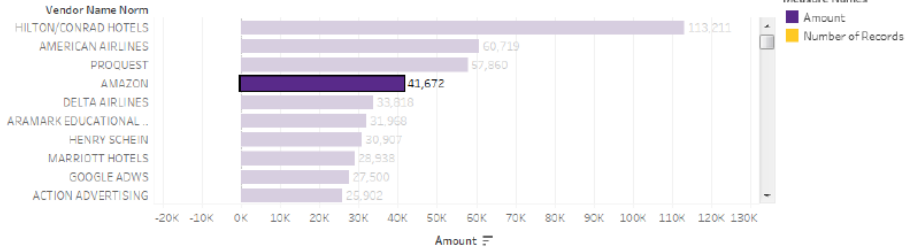


Appendix 2. Which vendors do cardholders purchase from the most?

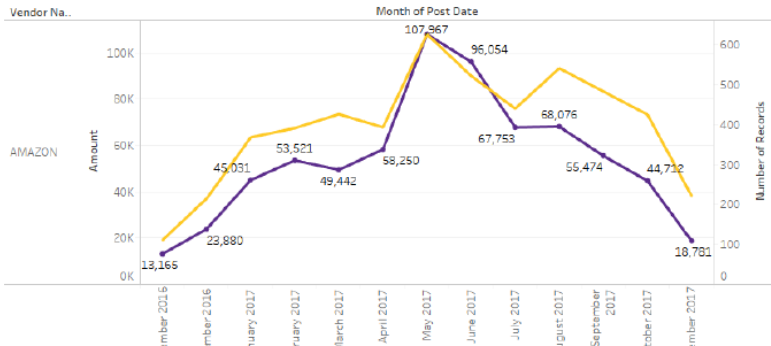
Which vendors do cardholders (CHs) purchase the most?	Which MCCs are transactions charged the most?	What are the purchasing trends by MCC?	Where do ECU employees use their ProCards?	What are the purchasing trends by vendor zip?	What are the purchasing trends by CH by total amount?	What are the purchasing trends by CH by # of swipes?	What are the purchasing trends by CH by # of swipes?
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Purchases by Vendor for the Statement Period in Review

Click the purple bar to view the vendor trend data below.



Trend Data for 12-Month Rolling Year

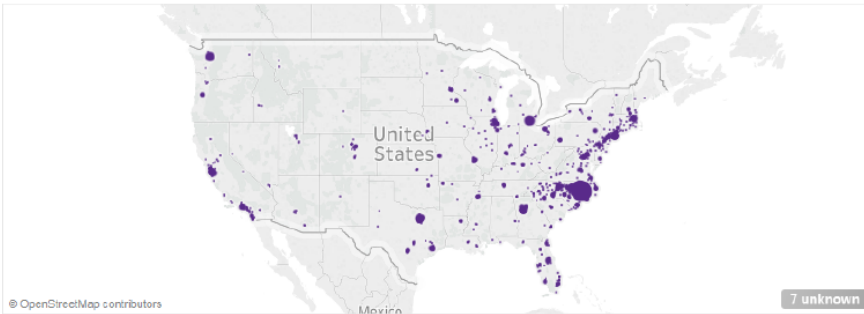


Appendix 3. Where do employees use their ProCards?

Which vendors do holders (CHs) use the most?	Which MCCs are transactions charged the most?	What are the purchasing trends by MCC?	Where do ECU employees use their ProCards?	What are the purchasing trends by vendor zip?	What are the purchasing trends by CH by total amount?	What are the purchasing trends by CH by # of swipes?
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Purchases by Vendor Zip

Click the purple dots to view the vendor zip detail below.



Vendor Zip Detail

Vendor ZIP	Vendor No..	Purchase D..	Amount
20016	AACAP	11/9/2017	500.00
22039	AVIXA CRM ..	11/13/2017	500.00
27601	NC QUICK PASS	10/26/2017	500.00
27835	VIDANT HE..	10/14/2017	500.00
27858	STARLIGHT ..	11/9/2017	500.00
53202	ACNS	10/16/2017	500.00
94043	AAMC	11/13/2017	500.00
	GOOGLE	10/13/2017	500.00
	ADWS	10/14/2017	1,000.00
		10/15/2017	1,500.00
		10/16/2017	500.00
		10/17/2017	1,000.00
		10/18/2017	1,000.00
		10/19/2017	1,500.00

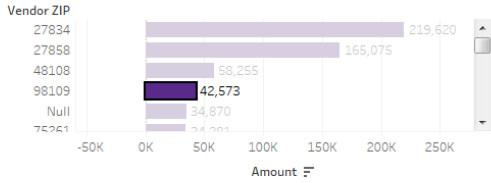
Appendix 4. What are the purchasing trends by cardholder by amount?

Which vendors do cardholders (CHs) use the most?	Which MCCs are transactions charged the most?	What are the purchasing trends by MCC?	Where do ECU employees use their ProCards?	What are the purchasing trends by vendor zip?	What are the purchasing trends by CH by total amount?	What are the purchasing trends by CH by # of swipes?
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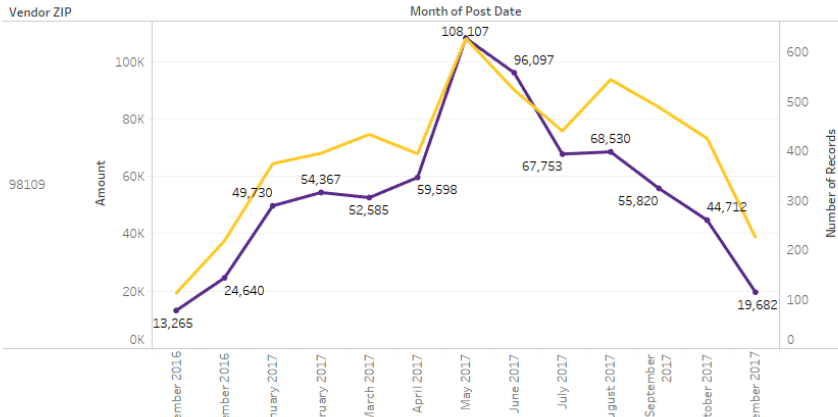
Purchases by Vendor Zip for the Statement

Period in Review

Click the purple bar to view the vendor zip trend data below.



Trend Data for 12-Month Rolling Year



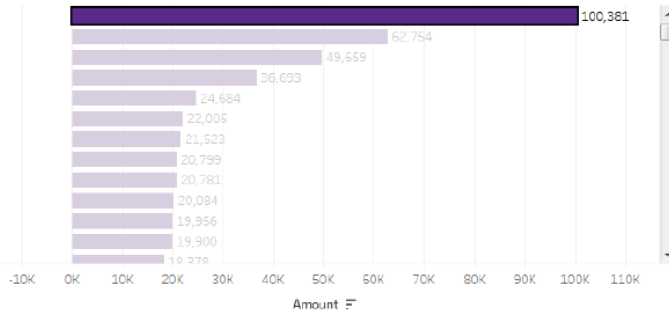
Appendix 5. What purchases are the cardholder's making?

Navigation bar with filters:

- What purchases are the cardholders making? (Selected)
- Are cardholders using preferred vendors?
- Do the transactions follow Benford's law?
- Do transactions by MCC follow Benford's Law?
- Are CHs with a \$1500 transaction limit splitting transactions?
- Are CHs with a \$2500 transaction limit splitting transactions?
- Are CHs with a \$5000 transaction limit splitting transactions?

Spend by Cardholder

CH Full Name



Txn Detail

CH Full Name	Vendor Na..	Txn Number	Purchase D..	Amount
[Redacted]	CAMBRIDGE..	TXN004240..	10/13/2017	132.00
[Redacted]	CHRONICLE..	TXN004250..	10/18/2017	8,814.49
[Redacted]	GEOLOGICA..	TXN004245..	10/16/2017	300.00
[Redacted]	HENRY STE..	TXN004252..	10/19/2017	3,675.00
[Redacted]	IBISWORLD	TXN004242..	10/12/2017	18,589.00
[Redacted]	INTERNATI..	TXN004253..	10/20/2017	29.40
[Redacted]	MARQUIS..	TXN004246..	10/17/2017	1,395.00
[Redacted]	NEWSBANK..	TXN004281..	11/2/2017	9,085.00
[Redacted]	ONTHEBOA..	TXN004303..	11/14/2017	401.50
[Redacted]	PROQUEST	TXN004249..	10/18/2017	14,330.00
[Redacted]		TXN004291..	11/7/2017	1,500.00
[Redacted]		TXN004293..	11/7/2017	4,860.00
[Redacted]		TXN004293..	11/8/2017	16,000.00
[Redacted]		TXN004295..	11/8/2017	21,170.00

Google Search results for CARQUEST. The search shows approximately 2,970,000 results. The top result is 'Carquest Auto Parts® - Great peop' with the URL https://www.carquest.com/. Below this, there is a snippet about CARQUEST's partnership with manufacturers. A location pin for 'Kinston' is also visible, with the address 'Carquest Auto Parts at 809 Mitchell St in Kinston, NC is one ...'.

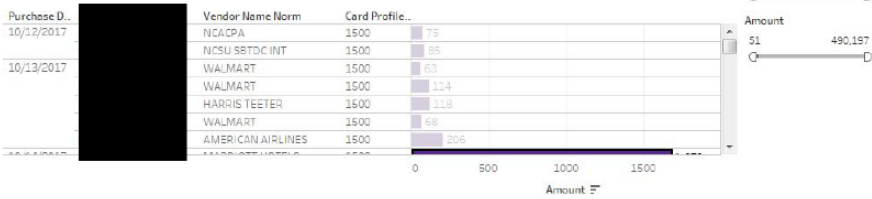


Appendix 6. Are cardholders with a \$1500 transaction limit splitting transactions?

What purchases are the cardholders making?	Are cardholders using preferred vendors?	Do the transactions follow Benford's law?	Do transactions by MCC follow Benford's Law?	Are CHs with a \$1500 transaction limit splitting transactions?	Are CHs with a \$2500 transaction limit splitting transactions?	Are CHs with a \$5000 transaction limit splitting transactions?	Are CHs with a \$7500 transaction limit splitting transactions?
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Split Transactions by Cardholder-\$1500 Single Transaction Limit

If the results are blank, then there were no split transactions for this cardholder profile.



Split Transactions Detail-\$1500 Single Transaction Limit

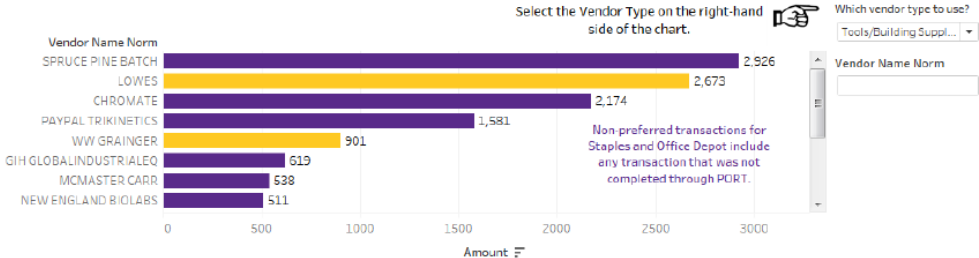
Vendor Na...	Txn Number	Purchase D...	Amount
MARRIOTT HOTELS	TXN00423906	10/14/2017	559.81
MARRIOTT HOTELS	TXN00423976	10/14/2017	559.81
MARRIOTT HOTELS	TXN00424246	10/14/2017	559.81

Appendix 7. Are cardholders using preferred vendors?

What purchases are the cardholders making?	Are cardholders using preferred vendors?	Do the transactions follow Benford's law?	Do transactions by MCC follow Benford's Law?	Are CHs with a \$1500 transaction limit splitting transactions?	Are CHs with a \$2500 transaction limit splitting transactions?	Are CHs with a \$4000 transaction limit splitting transactions?
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Preferred Vendors-State Funds (begin with 11)

This test is not complete, office supplies, computers, and/or other items may have been purchased from general vendors like Amazon or Walmart.



Preferred Vendors Detail

Vendor Name	Txn Number	Purchase D.	Amount
BADGE A.M.	TXN00428706	11/6/2017	366.94
CANLESS AL...	TXN00424359	10/13/2017	96.90
CAVALIER H...	TXN00426267	10/25/2017	39.66
CHROMATE	TXN00425118	10/20/2017	198.39
	TXN00425123	10/20/2017	424.73
	TXN00425192	10/20/2017	429.25
	TXN00425220	10/20/2017	186.90
	TXN00425272	10/20/2017	240.26
	TXN00427558	11/1/2017	425.78
	TXN00427595	11/1/2017	268.25
GIH GLOBALI...	TXN00424942	10/19/2017	630.87
INDUSTRIAL...	TXN00424081	10/13/2017	-12.08
HOME DEP...	TXN00428463	11/2/2017	53.40
INDUSTRIA...	TXN00427747	11/1/2017	40.70
LINDE GAS NA	TXN00424851	10/19/2017	78.30
	TXN00427180	10/28/2017	40.60
	TXN00427476	11/1/2017	40.60
	TXN00430127	11/14/2017	81.00

Google+ Search Images Maps Play YouTube Gmail News

Google OFFICE DEPOT

All Images Videos News

About 16,800,000 results

Any time
Past hour
Past 24 hours
Past week
Past month
Past year

Office Depot & OfficeMax Office
https://www.officedepot.com/ -
Shop Office Depot and OfficeMax for I
technology and more. Office Depot an

Office Depot greenville, NC
Shop office supplies, furniture &
technology at Office Depot ...

All results
Verbatim

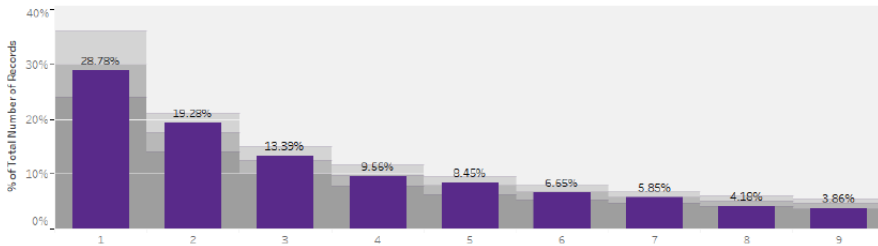
Greenville
703 S.E. GREENVILLE BLVD.
GREENVILLE SQUARE ...

Appendix 8. Do the transactions follow Benford's law?

What purchases are the cardholders making?	Are cardholders using preferred vendors?	Do the transactions follow Benford's law?	Do transactions by MCC follow Benford's Law?	Are CHs with a \$1500 transaction limit soliciting transactions?	Are CHs with a \$2500 transaction limit soliciting transactions?	Are CHs with a \$5000 transaction limit soliciting transactions?
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Benford's Law-Leftmost Digit

Benford's law is a mathematical law that states that the leading, or leftmost, digit in many real-life data sources is distributed in a very specific manner. Specifically, the number 1 occurs as the leading digit about 30% of the time, and as numbers get larger they occur less frequently, with the number 9 occurring less than 5% of the time. Benford's law can reveal fraudulent information. Click the purple bar to view the transactional details below.



Benford's Law Detail

Vendor Name Norm	Trn Number	Purchase D.	
2XL CORP/CARE GYM/WIP	TXN00427011	10/26/2017	729.63
3PLAY MEDIA	TXN00428126	11/2/2017	664.80
4IMPRINT	TXN00426747	10/26/2017	178.35
	TXN00424487	10/16/2017	3,365.46
	TXN00429308	11/8/2017	1,401.72
	TXN00424063	10/13/2017	-255.51
	TXN00427322	10/30/2017	1,534.66
4MD MEDICAL	TXN00425985	10/23/2017	2,970.00
855 321 8844 TUGG	TXN00425819	10/23/2017	607.00
	TXN00429834	11/10/2017	232.00
1000BULBS	TXN00428092	11/2/2017	255.24
	TXN00428122	11/2/2017	250.97
(800)6836346 VENDINI TIX	TXN00429169	11/7/2017	635.36
A & B AUTO SERVICE	TXN00426241	10/24/2017	25.00
A R EDITIONS	TXN00429482	11/8/2017	392.54

Appendix 9. How are purchases divided amongst the days of the week?

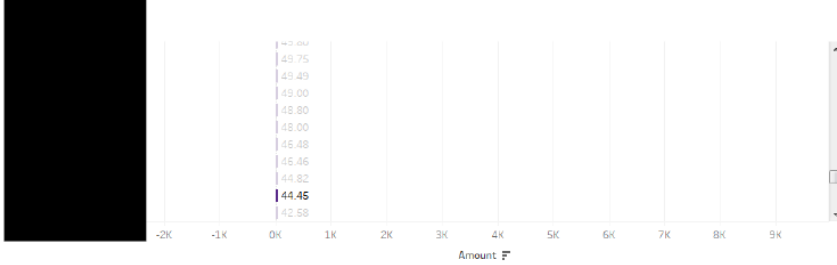


Appendix 10. Which cardholders are making purchases on the weekends?

Navigation tabs:

- Which CHs are making purchases on the weekends? (Active)
- Have transactions posted to blocked MCCs?
- Have transactions posted to questionable MCCs?
- Are any vendors used by only 1 dept? By only 1 CH?
- Do CHs have a low # of transactions with high dollar amounts?
- Are there round dollar transactions?
- Are CHs making purchases at local vendors?
- What transactions have post key word

Weekend Txn by CH



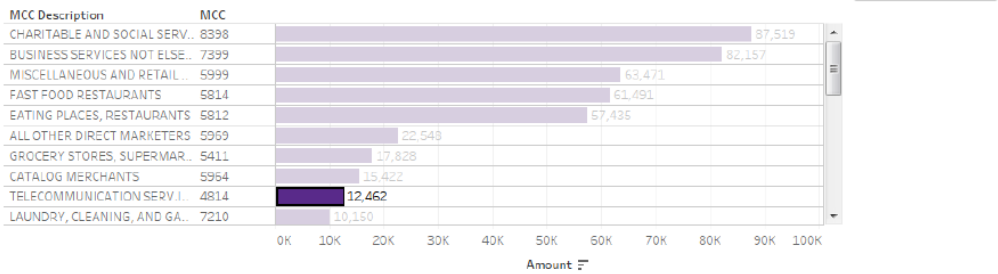
Txn on Weekends Detail

CH Full Name	Txn Number	Vendor No.	Purchase D..	Amount
[REDACTED]	TXN00424253	PAPA JOHNS	10/14/2017	44.45

Appendix 11. Have transactions posted to questionable MCCs?

Which CHs are making purchases on the weekends?	Have transactions posted to blocked MCCs?	Have transactions posted to questionable MCCs?	Are any vendors used by only 1 dept? By only 1 CH?	Do CHs have a low # of transactions with high dollar amounts?	Are there round dollar transactions?	Are CHs purchase vendors
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Purchases to Questionable MCCs



Questionable MCC Detail

MCC Description	MCC	Vendor Name Orig	Txn Number	Amount
TELECOMMUNICATION SERV. INCLUD. LOCAL/D	4814	AT&T PREMIER EBIL	TXN00427110	1,511.18
		ATT BILL PAYMENT	TXN00425926	1,126.96
		CENTURYLINK/SPEEDPAY	TXN00426458	471.89
		CENTURYLINK/SPEEDPAY	TXN00429406	175.39
		CENTURYLINK/SPEEDPAY	TXN00429442	105.17
		CENTURYLINK/SPEEDPAY	TXN00430336	13.00
		USCC CALL CENTER	TXN00427675	4,157.21
		VZWRLSS IVR VB	TXN00425225	117.55
		VZWRLSS MY V2 VB P	TXN00430171	117.55
		CENTURYLINK/SPEEDPAY	TXN00426153	1,882.53
		CENTURYLINK/SPEEDPAY	TXN00429558	139.71
		CENTURYLINK/SPEEDPAY	TXN00425499	322.99
		CENTURYLINK/SPEEDPAY	TXN00425738	72.95
		CENTURYLINK/SPEEDPAY	TXN00426643	200.23
		CENTURYLINK/SPEEDPAY	TXN00426761	83.49
CENTURYLINK/SPEEDPAY	TXN00426759	123.37		
CENTURYLINK/SPEEDPAY	TXN00429645	88.94		

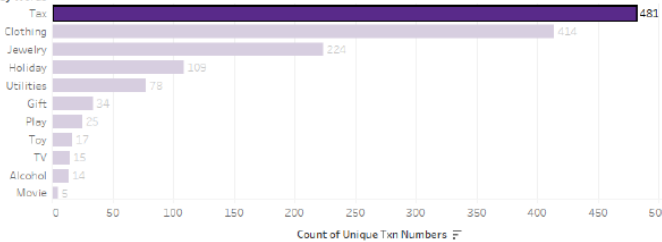
Appendix 12. Have transactions posted using top keywords?

3	Have transactions posted to bidded MCCs?	Have transactions posted to questionable MCCs?	Are any vendors used by only 1 CH? By only 1 CH?	Do CHs have a low # of transactions with high dollar amounts?	Are there round dollar transactions?	Are CHs making purchases at local vendors?	What transactions have posted using top keywords?	Have items been purchased?
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Top Key Words

If a transaction contains one of these key words, it does not necessarily indicate misuse, fraud and/or abuse. Key words are items that may be questionable or require further review. If multiple key words are within the data fields searched, the transaction will be included in only one key word category, not each of the categories.

Top Key Words



Top Key Words

- (All)
- Alcohol
- Clothing
- Consultant
- Gift
- Holiday
- Insurance
- Jewelry
- Movie
- Not a Top Concern
- Play
- Tax
- Toy
- TV
- Utilities

Purchase Date

1/28/2016 11/15/2017

Key Word Detail

Vendor Name Norm	Detail Description	Txn Number	Purchase D..	
DOMINOS PIZZA	Tax	TXN00425591	10/20/2017	87.58
GREAT OUTDOOR PROV	Null	TXN00426330	10/25/2017	-6.47
	Card Transaction	TXN00426330	10/25/2017	-6.47
DOMINOS PIZZA	Tax	TXN00428372	11/2/2017	496.00
JELLY BELLY CANDY CO	Tax	TXN00424424	10/16/2017	76.49
MURPHY EXPRESS	Tax	TXN00428549	11/2/2017	17.19
		TXN00428800	11/5/2017	29.36
		TXN00429270	11/7/2017	42.63
SHEETZ	Tax	TXN00424598	10/17/2017	17.10
SHELL OIL	Tax	TXN00427974	11/1/2017	35.00
WAWA	Tax	TXN00427142	10/29/2017	22.22
FOOD LION	Tax	TXN00426905	10/28/2017	28.94
JERSEY MIKES	Tax	TXN00426910	10/27/2017	268.40
SHELL OIL	Tax	TXN00425714	10/20/2017	33.88
		TXN00426070	11/2/2017	10.40

Due to the nature of the search, some transactions may be duplicated.

Appendix 13. Have questionable items been posted?

14	Have transactions posted to blocked MCCs?	Have transactions posted to questionable MCCs?	Are any vendors used by only 1 card? By only 1 CH?	Do CHs have a low # of transactions with high dollar amounts?	Are there round dollar transactions?	Are CHs making purchases at local vendors?	What transactions have posted using top key words?	Have questionable items been purchased?
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Level 3 Data Search by Keyword

Enter a search term in the box on the right-hand side of the data. The filter will search the vendor name, item description, detail description, and the comments for the term. If a transaction appears questionable and you would like to review additional transactions made by the cardholder, enter the CH's name in the box on the right-hand side of the data. Results will populate in the bottom data set. Specific time periods can be reviewed as well by adjusting the purchase dates.

Level 3 Data Search

Vendor No.	Detail Description	Rcdtype	Txn Number	Purchase Date	
WALMART		D	TXN00427034	10/28/2017	2,000.00
	Card Transaction	C	TXN00427034	10/28/2017	

Search Term

Purchase Date
12/30/2015 11/15/2017

Enter a cardholder's name below to view all of their transactions in the CH Detail.
CH Full Name

Purchase Date
10/20/2016 11/15/2017

Due to the nature of the search, transactions may be duplicated.

Recommended search terms are gift, iPad, movie, toy, tv, and any item that would be questionable or unallowable.

Recommended time periods are the weeks prior to Christmas and the weeks prior to the end of the fiscal year.

CH Detail

Vendor Name Norm	Detail Description	Txn Number	Purchase D.	
AIR FILTER	Null	TXN00428659	11/3/2017	60.24
AMERICAN ASSOC FOR LA.	Null	TXN00427624	10/31/2017	160.00
BUNNYCO	Null	TXN00427786	11/2/2017	200.00
FACTORY EXPRESS	Null	TXN00429178	11/8/2017	149.44
LOWES	Null	TXN00428978	11/7/2017	7.18
PHARMACAL RESEARCH	Null	TXN00427455	10/30/2017	3,646.88
		TXN00429076	11/7/2017	29.95
ASHLEY FURNITURE HOME	Null	TXN00426282	10/24/2017	460.00
SIGNSMITH	Null	TXN00429490	11/9/2017	95.00
AACSB	Null	TXN00429634	11/9/2017	125.00
ECU PRKING TRYS SVCS POS	Null	TXN00427287	10/30/2017	30.00
GREENVILLE PITT CHAMBR	Null	TXN00427778	11/1/2017	40.00
AMAZON	Null	TXN00424464	10/16/2017	37.06
		TXN00427256	10/30/2017	189.99

Appendix 14. Roles and responsibilities of each department

Internal Audit	Materials Management	Information Technology
(Monthly) Will pull the ProCard™ transactional data from Works®.	(Monthly) Will access and save the Tableau® packaged workbook when notified that it is available	(Monthly) Will maintain the recurring running script that looks in the agreed-upon drop off folder on PirateDrive, picks up data file if present, and alters the data file as follows: <ul style="list-style-type: none"> - Runs SQL to perform vendor normalization - Runs SQL to parse out the “Parent” and “Child” transactions - DOES NOT make any other changes to the format, content, field formatting, etc. to the data. Making such changes can affect the way Tableau recognizes the data and performs the analytics. All data fields must remain exactly as they were when picked up by the ITCS program.
(Monthly) Will place the raw data in the agreed-upon drop off folder on PirateDrive for IT routine to pick up, scrub and return to IA.	(Monthly) Will review the Tableau packaged workbook, review the results, and conduct and document audit processes as normal (using this new tool instead of the previously relied upon reports and techniques)	(Recurring/as needed) Will work with Internal Audit to resolve any problems with the program, or to make any necessary changes to the vendor normalization and Parent/Child programming logic
(Monthly) Will connect the Tableau workbook to the new data, perform high-level spot checks to be sure the data is being read correctly by Tableau, package the workbook.	Contact Internal Audit with any problems or questions about the Tableau workbook, desired changes, etc.	
(Recurring) Will receive input from Materials Management regarding any problems with the data or with the Tableau analysis of the data; will resolve Tableau problems and requests with Materials Management.		

Appendix 15. Email from University compliance officer regarding the continuous monitoring tool.

“I have retired my other split reports that I had to manually configure and drill into. That has saved me a substantial amount of time and I am very thankful. Like I said, if there could be a way to export to Excel, it would be my favorite even more. Maybe a future release?”

I thought we’d like the weekend report more, however a lot of them have to deal with when the vendors are charging the cards and employees on travel. I have focused more on looking into store front locations (Target, Walmart, etc.) for these types of transactions. If I see anything odd, I’ll definitely bring to your attention.

It’s interesting, but I’ve found that people seem to be less productive on Mondays and Tuesdays, as far as purchasing goes.

The preferred vendor tabs is one of my favorites as well, because I can easily pin point the cardholders I need to email regarding State Contracts and I can send a mass email. Now, if I can convince someone on my team that we don’t have to look at every single individual transaction, I’ll be onto something! Old habits die hard, but we’re getting there.

Benford’s law has been really interesting in “real-life” action.

The questionable items tab has helped me with matching up some items.”