

April 30, 2019

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0955

**Subject: Express Card Program
 Report 2019-05**

The final report for Express Card Program Report 2019-05, is attached. We would like to thank all members of the department for their cooperation and assistance during the review.

Because we were able to reach agreement regarding management action plans in response to the audit recommendations, a formal response to the report is not requested. The findings included in this report will be added to our follow-up system. We will contact you at the appropriate time to evaluate the status of the management action plans.

UC wide policy requires that all draft reports be destroyed after the final report is issued. We also request that draft reports not be photocopied or otherwise redistributed.

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Director
Audit & Management Advisory Services

Attachment

cc: Judith Bruner
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UC San Diego

AUDIT & MANAGEMENT ADVISORY SERVICES

Express Card Program
Report No. 2019-05
April 2019

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I. EXECUTIVE SUMMARY

Audit & Management Advisory Services (AMAS) has completed a review of the Express Card (EC) Program as part of the approved audit plan for Fiscal Year 2018-19. The objective of our review was to examine campus practices for the administration of the EC Program. We concluded that central oversight was generally adequate. However, we noted opportunities to strengthen and enhance the first-line review of EC purchases within the cardholders' home departments and opportunities for enhancing the current EC Program tools. Our observations and management action plans are summarized briefly below:

A. Reviews of EC Purchases at The Home Department Level

The first line reviews performed in the cardholder's home departments are currently missing some non-compliant EC purchases. For a sample of 40 transactions reviewed, 12 (30 percent) of the transactions were non-compliant with at least one aspect of UC policy. UC Business and Financial Bulletin BUS-43 requires mandatory initial and annual refresher procurement card training for all cardholders and reviewers. However, a review of training records obtained via an IFIS cardholder query indicated that about 85 percent of active UCSD cardholders are not up to date on the annual refresher training requirement. Discussions with the Express Card Program Team (ECPT) Manager revealed the Team was already working on streamlining training materials (which are currently unnecessarily lengthy) before the start of our audit.

Once the current updating of the EC training materials is complete, all cardholders and ECDAs will be reminded to complete their initial and annual refresher training timely so as to be better trained on University expectations for identifying and correcting non-compliant EC purchases. Purchasing privileges may also be reduced as appropriate to ensure compliance with university policies.

B. Enhanced EC Manager Functionality, Use Tax Charging Errors and Data Analytics

The EC Manager¹ has been a very useful tool for managing and overseeing the EC Program. However, opportunities still exist to improve its functionality to help ECPT have improved oversight and management of departments EC transactions.

During UCSD's ongoing Enterprise System Renewal (ESR) initiative, Business and Financial Service (BFS) will continue to work closely with Information Technology Services (ITS) to identify opportunities for the new EC information environment to best support campus policy compliance objectives related to EC purchases. For example, to the extent practical, the enhanced EC information systems will provide audit trails to help the ECPT verify that all EC purchases are consistently being properly documented and reviewed within the cardholders' home departments. Also, deploy tools that can help monitor and identify tax charging errors.

Observations and related management corrective actions are described in greater detail in section V. of this report.

¹ UCSD's online tool for managing EC accounts, roles, and transactions.

II. BACKGROUND

Audit & Management Advisory Services (AMAS) has completed a review of the UCSD EC Program as part of the approved audit plan for Fiscal Year 2018-19. This report summarizes the results of our review.

The EC system has been in place at UCSD for over twenty years. At UCSD, there are over 10,000 EC purchases made each month. The Express Card program is an important element of UC San Diego's system of Integrated Procure-to-Pay Solutions (IPPS). As of December 2018, a total of 2,882 cardholders had active Express Cards. In Fiscal Year (FY) 2018, UCSD Express Cards were used to make over \$46 million in purchases. The table below illustrates the growth of the program by comparing several selected years.

Description	2003	2011	2018
Number of cardholders	1,150	2,272	2,882
Annual number of transactions	44,716	112,905	144,702
Annual dollar value	\$9,687,642	\$40,185,188	\$46,493,605
Average value per transaction	\$217	\$356	\$321

The Express Card Program Team (ECPT) administers and oversees all aspects of the Express Card Program. Department roles for EC activity include the cardholder, who makes purchases, the EC Department Administrator (ECDA) who is responsible for overseeing Department implementation and use of the card, and the Administrative Support role who supports the ECDA such as by performing card maintenance functions. ECDA's use EC Manager to complete Express Card processes online such as creating new or additional Express Cards, reviewing transactions, and performing the account redistribution process. Mandatory EC training is required for all cardholders and ECDA's. All users who have defined roles within EC Manager such as a Cardholder, Transaction Reviewer (reviewer), Department Administrator, or Administrative Support have access to use the EC Attachment Tool. In addition, all cardholders are required to sign an agreement holding them responsible for compliance with all policies and procedures for the use of the card, including program restrictions and limitations.

Over the years, BFS has been dedicated to improving EC processes on an ongoing basis. For example, they have implemented and continue to improve the EC Manager system, which is UCSD's online tool for managing EC accounts, roles, and transactions. Using EC Manager, cardholders, ECDA's and reviewers can complete EC processes online including assigning and managing cards, viewing reports, managing program roles, reviewing transactions, adjusting account and index codes, adjusting tax errors and other functions. Also, the ECPT recently implemented an Attachment Tool linked to EC Manager to help ensure that cardholders upload their EC purchasing documentation promptly. More recently, the ECPT has been streamlining EC training materials. They are also currently encouraging departments to move to Amazon Business, which will reduce the volume of Amazon.com purchases made on Express Cards.

University EC policies and procedures are well-documented. EC purchases are subject to UC and UCSD policies including:

- A limit of \$4,999 is established for a single transaction; and a limit of \$10,000 is established for

each monthly billing cycle.

- Express Cards must be used for official UCSD business purposes; and personal charges are strictly forbidden.
- A limit is placed on the types of goods and services purchased. Merchant Category Classification (MCC) Codes are used to block categories of vendors as well as specific vendors.
- The EC may not be used for certain items vulnerable to misuse such as travel, food, and cash advances via ATMs.
- Exceptions to policies regarding dollar limits and MCC Code restrictions must be approved.
- Receipts must be obtained and uploaded to the Attachment Tool for review and filing, along with a statement of the business purpose of the expense.
- Cardholders and reviewers are required to periodically complete training on the University's EC policies and procedures.

UCSD policies, procedures and systems have now been in place for many years, and in general the system functions well. Express Cards have proven to be a very useful and efficient option for making low value purchases. The vast majority of these transactions appear to be routine and compliant with University policy. For cases where UCSD employees do occasionally misuse their UCSD Express Cards, the University has well established procedures in place to investigate the alleged misuse and appropriately sanction the offending employees.

UCSD has established procedures in place for rigorous and ongoing review of EC purchases. This system of reviews exists on several levels. The first and most inclusive and crucial level of review of EC purchases is the initial review which usually occurs within the cardholder's department, is designed to be a 100 percent review of transactions. UC and UCSD policy requires that all EC purchases are reviewed independently by a reviewer on a timely basis. Moreover, department reviewers typically work close to the cardholders, know the context of the work being done in the department, and are therefore in a much better position to know whether or not any given purchase is justified.

A second level of review are the audits of sampled EC purchases performed by the ECPT to test compliance with UC and UCSD EC policies. The ECPT audits several samples of EC purchases monthly.

Finally, a third level of review of EC transactions takes place within the overall University financial ledger review process. Once EC purchases appear on a department's financial ledger, they can be seen by any individuals who have access to those ledgers. This would include, for example, Principal Investigators and Fund Managers who may notice questionable EC purchases as part of their regular financial oversight duties. In most campus departments, this ledger review process is operationalized through the UCSD Transaction Sampling system, which is a process that randomly selects financial transactions to be reviewed during ledger reconciliation and account validation. As such, the ledger review process is more concerned with the accuracy of financial reporting and less so with questions of compliance with specific EC policies.

When the ECPT find non-compliant EC purchases, they provide additional training and policy guidance to the individuals involved as needed. However, this approach only benefits those directly involved in the transactions selected for audit. Due to the limited resources that only allow for reviewing small samples of transactions, it is difficult to effect systemic change across the campus, especially since the

population of EC users and reviewers is constantly changing. What is far more beneficial, and which has been a focus of BFS, is identifying opportunities to improve the first line transaction reviews being conducted in the departments to ensure the general improvement in EC policy compliance across the campus.

III. AUDIT OBJECTIVE, SCOPE, AND PROCEDURES

The objective of our review was to examine campus practices for the administration of the EC Program. The scope of our review included activities and business practices for FY 2016-2017 and FY 2017-2018. In order to achieve our objective, we performed the following:

- Reviewed UC and UCSD EC policies and procedures;
- Reviewed prior AMAS audits relative to the use of the Express Card;
- Interviewed members of the ECPT;
- Reviewed recent audits completed by members of the ECPT;
- Reviewed training materials for EC cardholders and administrators;
- Reviewed the EC User Agreement;
- Reviewed the Visa Bank Intellilink system used by the ECPT;
- Evaluated the appropriateness of department assignments on the master list of EC cardholders, ECDAs, and reviewers; and
- Selected several samples of transactions for detailed testing, and examined the supporting documentation, including receipts and business purpose.

IV. CONCLUSION

Our audit found that BFS is providing strong oversight in managing the campus procurement card program at UCSD. Management and staff have a strong working knowledge of University policies and internal controls and how they should be implemented. The ECPT is committed to ensuring that every UCSD EC purchase is compliant with policy, and the Team is dedicated to constantly improving these processes. BFS has continually improved UCSD's EC policies and systems such as by implementing the EC Manager system. Using technology in this way as the ECPT has been doing is critical to the Team's success given the small ECPT staff tasked with monitoring policy compliance for nearly 150,000 EC purchases which are made on the UCSD campus each year.

During our review we noted several opportunities to possibly improve EC policy compliance with the University's EC policies. Our specific suggestions are included in Section V. of this report.

V. OBSERVATIONS AND MANAGEMENT ACTION PLANS

A.	Reviews of EC Purchases at the Home Department Level
<p>A significant number of various non-compliant EC transactions are currently missed by the first line reviews performed in the cardholder's home departments. In a random sample of 40 transactions, 12 (30 percent) of the transactions were non-compliant with an aspect of UC policy. Also, 85 percent of active cardholders need refresher training.</p>	
<p>Risk Statement/Effect</p>	
<p>Non-compliant EC purchases missed during the first line review are likely to remain undetected, which hinders the achievement of Management's policy objectives of ensuring that EC transactions comply with the University policies.</p>	
<p>Management Action Plan</p>	
A.1	<p>Once the current updating of the EC training materials is complete, all cardholders and ECDAs will be reminded to complete their initial and annual refresher training timely to be better trained on University expectations for identifying and correcting non-compliant EC purchases. Purchasing privileges may also be reduced as appropriate to ensure compliance with university policies.</p>

A. Reviews of EC Purchases at The Home Department Level – Detailed Discussion

Various non-compliant purchases are missed in the first line review at the cardholder home department. Also EC Manager Users provide inadequate documentation of their EC purchases and a significant number of active UCSD cardholder are not current on annual refresher training. These observations are discussed below:

Non-compliant EC Purchases

We sampled about 100 EC purchases made after July 1, 2017. This included a sub-sample of 40 purchases which were selected at random and noted, 12 (30 percent) of the transactions were non-compliant with an aspect of UC/UCSD policy.

- Four of these 40 randomly selected transactions (10 percent) lacked required supporting documentation in EC Manager²;

² As noted in the background of this report, BFS has recently added an automated reminder system for users who fail to upload required supporting documentation in a timely manner. Once this new feature takes full effect, it

- Five (12.5 percent) lacked adequate information on what was purchased or why;
- One of the transactions (2.5 percent) was for gift items, which is a category of EC purchase not permitted by policy;
- One transaction (2.5 percent) receipt uploaded to Attachment Tool was not itemized; and
- One transaction (2.5 percent) appeared to be for business meeting entertainment expenses, also a category of EC purchase restricted by policy.

However, as further depicted in Attachment A, EC purchases are typically for small value, routine needs and most were fully compliant with applicable UCSD EC policies.

In ECPT reviews, they routinely find various examples of non-compliant EC purchases which have made it past the first line review in the cardholder's home department. The ECPT monthly random samples of EC purchases show similar results. For example, in their random samples for the three months August, September and October 2018, the ECPT had to follow-up on a total of 76 of the 353 (21.5 percent) of the randomly selected EC transactions they reviewed. Most frequently, this was because the purchases were not well-documented or appeared to have violated some other EC policy or restriction. In addition, some examples of the types of non-compliant EC transactions commonly found by ECPT include missing or incomplete documentation, inadequate documentation of business purpose, purchases of restricted items and split purchases.

A Majority of Cardholders Are Not Current on the Annual Refresher Training

UC Business and Financial Bulletin BUS-43 requires mandatory initial and annual refresher procurement card training for all cardholders and reviewers. However, a review of training records obtained via an IFIS express cardholder query indicated that about 85 percent of active UCSD cardholders are not up to date on the annual refresher training requirement. Consequently, inadequate training (including refresher training) for EC users could be a contributor to the significant amount of non-compliant transactions missed as identified during this review and ECPT reviews. However, discussions with the ECPT Manager revealed the Team was already working on streamlining training materials (which are currently unnecessarily lengthy) before the start of our audit. The ECP manager indicated that they plan to ensure that all cardholders and reviewers complete the required refresher training.

Insufficient "Description / Business Purpose" information entered into EC Manager

The "Description / Business Purpose" information currently being manually entered into EC Manager by cardholders is often not sufficient to understand what was purchased and its business purpose. This information is typed into the EC Manager as part of the process for uploading attachments such as purchase receipts to the system. As a best practice, the purchase description information should be clear and understandable to subsequent reviewers with no knowledge of the cardholder's job or the expense and how it meets a valid business need.

Some cardholders making purchases are not adequately populating this field. In our random sample of 40 EC transactions, we noted five instances (12.5 percent) where the information entered into this field lacked information about what was purchased or why the purchase was necessary. Rather than clearly

should significantly reduce the problem of missing EC purchase supporting documentation in the future.

stating what was purchased and why, the review noted users often enter very minimal and generic text such as “Receipt”, “materials”, “lab equipment”, “Materials for work”, “software” or “iPad”, “computer accessories” among others.

Users who provide minimal information on their EC purchases seem to leave the University with incomplete purchase records. It also complicates the work of subsequent reviewers, who have less information available to them for understanding why purchases were made and often have to research the transaction with someone such as a business officer or ECDA in the originating department to determine if the purchase was for a valid business need. Also, this review process is unduly time consuming and could be avoided by cardholders entering sufficient information in the system the first time. Enhanced training of users on how to complete description and business purpose information could mitigate this issue.

B. Enhanced EC Manager Functionality and Data Analytics	
While ECPT administers and oversees all aspects of the EC Program, at present, the Team currently has no way of knowing whether anyone other than the cardholder has viewed any EC receipts which are uploaded to EC Manager. Second, some Sales and Use tax errors go undetected at the department level. Third, EC data exists in large datasets within several different systems and there are opportunities for correlating the purchase data with other data and conducting analysis to identify less obvious non-compliant transactions and other issues such as cardholder\reviewer relationships.	
Risk Statement/Effect	
Some system enhancement and data analytics coupled with ongoing training could help improve ECPT oversight and management of departments EC transactions to further help identify less than obvious non-compliant transactions.	
Management Action Plan	
B.1	During UCSD’s ongoing ESR initiative, BFS will continue to work closely with Information Technology Services (ITS) to identify opportunities for the new EC information environment to best support campus policy compliance objectives related to EC purchases. For example, to the extent practical, the enhanced EC information systems will provide audit trails to help the ECPT verify that all EC purchases are consistently being properly documented and reviewed within the cardholders’ home departments. Also, the ECPT will continue to work with ITS to deploy tools that can help monitor and identify tax charging errors in the EC program.

B. Enhanced EC Manager Functionality and Data Analytics – Detailed Discussion

Enhanced EC Manager tool functionality and improved data analytics to identify non-compliant transactions including tax charging errors and cardholder\reviewer relationships could assist the ECPT to have improved oversight of the EC program.

EC Manager Has Limited Capability to Assist ECPT Verify Departmental Reviews

While ECPT administers and oversees all aspects of the EC Program, at present, the Team currently has no way of knowing whether anyone other than the cardholder has viewed any EC receipts which are uploaded to EC Manager. Without a way to verify whether all transactions are reviewed at the department level, there is an increased risk of missing non-compliant and other inappropriate transactions. For example, one of the transactions judgmentally selected for review during this audit was a payment to a medical supply company. AMAS review of the supporting documentation uploaded to EC Manager for this payment noted the payment was for a Marketplace vendor invoice. ECPT preliminary research of this payment indicated that the invoice might have been paid twice, (once in Marketplace and once via Express Card)³. While the EC transaction reviewer should have caught this issue in the cardholder's department, there is also no way to know definitely whether this initial review occurred.

Discussions with the EC Manager applications programmer revealed there might be a relatively simple way of creating an audit trail for the review of purchasing documents⁴. The application programmer proposed approach would involve adding new audit functionality to the attachment audit table that would capture details about the identification and role of a user who uploaded the attachment. Also, when the attachment is downloaded and viewed, the audit trail functionality will capture the identification and role of the users taking this action. The audit trail functionality would make it possible to identify any EC purchase receipts not viewed by at least two different people (the person who originally uploaded the document and presumably either the ECDA or the reviewer) within a reasonable period of time. Finally, an automated email process could then be established by the ECPT to send email reminders to the departments reminding them of the need to perform these reviews.

Improved Tools to Identify Tax Charging Errors and Other Non-Compliant Issues

Currently, the principal tool in use by the ECPT is the Visa Intellilink system. The cloud-based Intellilink works well, but it suffers from two major shortcomings; it is slow and has limited query possibilities. Additional training in data analysis software could assist the ECPT to more easily isolate non-compliant transactions from within the many thousands of EC transactions processed on the campus every month. The discussions below illustrate issues with tax charging errors and how data from disparate systems could be used to identify less obvious non-compliant transactions.

Tax Errors - One of the duties of the initial EC transaction reviewer in the Cardholder department is to determine if the Use Tax field in EC Manager is correct. If a dollar amount displays in this field, the reviewer needs to check the transaction receipt for this purchase to see if the vendor charged tax. If the vendor did not charge tax, the Use Tax field in EC Manager should in general not be changed (EC Manager is programmed to automatically calculate Use Tax for out-of-state vendors who do not report tax separately). However, if the vendor charged tax at the point of sale, the reviewer should change the amount in the Use Tax field to zero so that the department is not taxed twice on this transaction. However, the rules for application of the taxes are complex as certain exemptions apply (for example,

³ This possible but not confirmed duplicate payment (in the amount of \$ 44,000) will be evaluated further in a related departmental review.

⁴ The change suggested by the application program would be a very minor. Since EC Manager may be going away with the advent of ESR, making major changes to EC Manager is not considered appropriate at this time.

the type of goods, origin of purchase and destination shipped among others).

Due to the complexity of these tax rules, it is not surprising that use tax charges are one of the types of noncompliant EC transactions which can occur and go undetected in the first line review in the Cardholder's home department. To illustrate how data analysis could be used, we analyzed a large file of EC purchase transactions focusing on patterns of use tax charges at the vendor level as described in **Attachment B**. We shared the results of our analysis with the members of the ECPT, who agreed this type of analysis by vendor is a useful means of isolating use tax charging errors.

Enhanced Data Analysis Opportunities - EC data exists in large datasets within several different systems and there is no process to correlate all the purchase data with other related data and conduct analysis to identify more complex non-compliant transactions. Availability of enhanced data analysis tools would enable the ECPT to more easily locate possibly non-compliant transactions and other issues from the large universe of EC transactions occurring each month at UCSD. A significant amount of EC purchase data is already available to the ECPT from EC Manager, the Visa Intellilink system, UCSD IFIS, and other UC systems⁵. The following examples illustrate opportunities to leverage data analysis.

- By comparing just a small subset of employee data and EC cardholder data, we identified 25 reviewers who are direct reports of cardholders they review and five ECDAs who appear to be directly subordinate to the cardholder. ECPT does not currently have a process to identify these cardholder\reviewer relationships.
- By comparing a file of vendor purchase descriptions downloaded from Visa Intellilink with a file of user-entered purchase descriptions downloaded from EC Manager, we were able to locate the purchase of a "Fitbit Ionic GPS Smartwatch" from Amazon.com that was simply indicated as "computer accessories" in the EC Manager. This would be a transaction requiring additional follow-up to ascertain a valid business need.

Email Correspondence and Tracking

The ECPT currently uses Microsoft Outlook to communicate with users about questioned transactions and has recently implemented a commendable process for generating automatic follow up emails to cardholders who fail to upload purchase receipt documentation into EC Manager promptly. However, due to the large volume of emails, ECPT would benefit from a software application to keep track and follow-up on unanswered emails. Several inexpensive software programs for this purpose are currently on the market. In addition, advanced features of Microsoft Outlook, such as the mail merge feature, can be used by the ECPT to simplify the process of generating outgoing emails to groups of people with whom particular types of follow up communication is needed. If there are plans to phase-out EC Manager, management should assess if these enhancement benefits would outweigh making no change.

Limited Visibility of Data in EC Manager

The ECPT currently has no convenient way to see all of the "Description / Business Purpose"

⁵ Similar data will be available in the future from UCSD's ESR initiative, once those systems go into production.

information entered into the system and can only look at this field in EC Manager on a transaction-by-transaction basis, which is very time-consuming. Also, the size of the data field is limited and in some cases truncated information entered by the cardholder.

As already indicated, the EC Manager system might be replaced as part of the ESR initiative. However, through discussions with the EC Manager, better visibility into data being entered into this field could still be achieved through some workaround that would benefit the ECPT. Specifically, the EC Manager would generate a weekly report in an Excel Spreadsheet from the EC Manager which can be reviewed by staff. Staff would then identify insufficiently documented transactions and could use the Mail Merge function in Microsoft Access or other software to send those originating departments reminder emails requesting adequate information for the questioned transactions.

Express Card Program
Attachment A – Summary of review of 40 EC purchases selected randomly
Audit & Management Advisory Services Project #2019-05

This attachment shows the sample of 40 random EC purchases reviewed by AMAS, in order to give a general idea of how Express cards being used. Our notes related to noncompliant transactions with the sample are included at the end of the following page.

Item	Amount	Vendor	Description / Business Purpose per EC Attachment Manager	Notes
1	75.95	BULK REEF SUPPLY	Purchase of supplies for wetlab aquarium	
2	10.85	AMAZON MKTPLACE PMTS	No data found for the current search	2.
3	14.91	WAL-MART #1700	Lock for Professor Restrepo's office door at	
4	133.92	PAYPAL *AVCOKEYEBAY	office supply	
5	1,621.64	COLLEGEWEAR INC	Warren College, staff to wear for official busines	
6	57.64	COSTCO WHSE #0401	(USE INDEX IRPSGSA) Drinks provided for first and second years during Orientation	
7	119.00	MDC SUBSCRIPTION SRVS	Acquisitions of Library resources	
8	247.72	VIP CLOTHING INC	Pants for staff	4.
9	1,774.52	AMZN MKTP US AMZN.COM/BIL	ITS Operations	3.
10	22.30	FEDEXOFFICE 00057950	promotional posters for Baja conservation photography outreach project	
11	136.34	CHARLES RIVER LAB	No attachments exist.	2.
12	86.98	POWER MOWER CORP ONLINE	Misc parts for repairing lawnmower	
13	89.17	AMAZON MKTPLACE PMTS	Xerox 6700 printer black imaging unit	
14	31.15	FEDEX 373463419	Shipping for buisness purposes	
15	54.90	AMAZON MKTPLACE PMTS	Itemized receipt/Packing slip	3.
16	410.76	THE HOME DEPOT #0669	Custodial and Maintenance supplies	
17	67.65	AMAZON MKTPLACE PMTS	SUPPLIES FOR RESEARCH IN HIGH-SPEED TUNABLE LIGHT GENERATION FROM STIMULATED INELASTIC ELECTRON TUNNELING AND BEYOND WWW.	
18	93.96	INTER DYNE SYSTEMS INC.	Lab Materials	
19	47.01	FEDEX 28802911	Participant Mailings - fed ex	
20	174.57	NEOPOSTINC	No attachments exist.	2.
21	487.68	IN *IDENTITYLINKS INC.	Custom embroidered JSOE scarves to give away at Faculty Emeriti breakfast (extras ordered to give away during donor visits)	5.
22	21.60	UCSD STARBUCKS PRICE CTR	Marshall College, 40th annual cultural celebration, TK#150348	
23	9.98	AMAZON MKTPLACE PMTS	No data found for the current search	2.
24	50.00	CGP	Professional Development- Webinar on IRA	
25	45.00	UCI MARKETPLACE 9006	Registration fee for Kri Howland to attend UCI Spr	

Express Card Program
Attachment A – Summary of review of 40 EC purchases selected randomly
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Item	Amount	Vendor	Description / Business Purpose per EC Attachment Manager	Notes
26	200.00	BIOMEDICAL ENGINEERING SO	1702130327 membership receipt Biomedical Engineering Society	
27	37.15	AMAZON MKTPLACE PMTS	Handheld Thermometer - Mandeville	
28	656.45	DRI*NVIDIA STORE	NVIDIA Jetson TX2 Developer Kit	
29	6,238.46	MCMaster-CARR		6.
30	213.61	AMAZON MKTPLACE PMTS	ADVAREG - ergonomic equipment purchased for Morgan Richert with approval from EH&S	
31	104.50	EDMUND OPTICS INC	Fresnal lens	
32	1,582.20	SAN DIEGO BASEBALL SUP	Softballs and tee for softball team	
33	117.66	RUBIO'S #165	Graduate Student Association, Executive Mtg - 10/1	7.
34	375.00	SCIENTIFIC SERVICES PLUS	Repairs to Percival incubator	
35	1,670.00	NAT'L RESIDENT MATCHING	Invoice & receipt	3.
36	435.00	ONTARGETJOBS	Receipt	3.
37	7.35	PAYPAL *ZHU WEIFENG	research supplies: headphone adapter	
38	110.10	EIS INC 678-255-3600	Epoxy for binding the PPTS	
39	890.00	UCSD EXTN WEB 85853	K Linnemeyer IRB course UCSD extension CCTJCHN	
40	24.98	AMAZON MKTPLACE PMTS	Lab supplies requested by PI/technical staff needed in support of the research project, add'l detail at dept.	

Notes:

1. As the above list shows, most EC purchases are for small value, routine needs and fully comply with EC policies.
2. For these transactions, no receipts were uploaded to EC manager for these four transactions.
3. In these cases, the Description data entered into EC managers conveys no information as to what was purchased or why.
4. This receipt uploaded to EC manager was not itemized as UC policy requires.
5. This EC purchase was for gifts, contrary to policy.
6. User apparently entered one character into this required field
7. This purchase was apparently for entertainment (a business meeting).

Express Card Program
Attachment B – Example of using data mining to search for
non-compliant use tax transactions
Audit & Management Advisory Services Project #2019-05

AMAS believes that additional training in data analysis software could assist the ECPT to more easily isolate non-compliant transactions from within the many thousands of EC transactions processed on the campus every month. To illustrate this, during our audit AMAS analyzed a large file of EC purchase transactions focusing on patterns of use tax charges at the vendor level. The theory behind this analysis was that Express Card purchases made from the same vendor within a small time window but treated differently with respect to use tax have in general a heightened risk of noncompliance. AMAS shared the results of our analysis with the members of the ECPT, who agreed this type of analysis by vendor is a useful means of isolating use tax charging errors. This use tax data mining example illustrates just one of the ways in which we believe a greater reliance on data analysis tools could assist the work of the ECPT.

As background, one of the duties of the initial EC transaction reviewer in the Cardholder department is to determine if the Use Tax field in EC Manager is correct. If a dollar amount displays in this field, the reviewer needs to check the transaction receipt for this purchase to see if the vendor charged tax. If the vendor did not charge tax, the Use Tax field in EC Manager should in general not be changed. However, if the vendor charged tax at the point of sale, the reviewer should change the amount in the Use Tax field to zero so that the department is not taxed twice on this transaction. There are multiple exceptions to this general rule. For example, if the University-purchased are shipped directly to a UCSD research site outside of California, neither sales or use tax applies. The same is true for various other types of purchases such as computer software received over the Internet, advertising and repair labor. Given the complexity of these tax rules, it's not surprising that use tax charges are one of the types of noncompliant EC transactions which can occur and go undetected in the first line review in the Cardholder's home department.¹

To perform this analysis, AMAS used a dataset of 352,123 Express Card transactions recorded in EC manager from the period from July 1, 2016 to June 30, 2018². This dataset included purchases made from a total of 43,159 distinct vendor names. Using data queries, AMAS filtered out from this population those vendor names whose transactions always had use tax activity, and also those vendors whose transactions never had use tax activity.

What remained was a group of 1,763 vendor names whose transactions were charged use tax only some of the time. We then sorted this remaining group based on the average dollar amount per transaction. For the top twenty vendors in this group based on average transaction amount, we used a Microsoft Access query to create worksheets showing the transaction detail for the period under review. These worksheets were formatted so as to cause possible use tax charging errors to stand out, as shown in the following examples.

¹ Preventing the errors from occurring in the first place is of course preferable to detecting them after the fact, which is why B&FS has always stressed the importance of training for EC Cardholders and reviewers. But data analysis tools can help to locate any such errors which do occur and are not detected in the first line review.

² Technically, some of the transactions in this dataset were outside of the scope of this audit, but we used a larger dataset because we were interested in seeing patterns in the data.

Express Card Program
Attachment B – Example of using data mining to search for
non-compliant use tax transactions
Audit & Management Advisory Services Project #2019-05

Example 1, Medicines purchased for the Student Health Center

Vendor	Transaction ID	Transaction Amount	Use Tax Amount	Transaction Date
GLAXOSMITHKLINE PHARMA B	1701050211	6,535.20	506.48	1/4/2017
GLAXOSMITHKLINE PHARMA B	1709180452	4,999.00	0	9/15/2017
GLAXOSMITHKLINE PHARMA B	1709180451	4,999.00	0	9/15/2017

On line 1 above, use tax was erroneously recorded for tax-exempt medicine purchased for the Student Health Center. On lines 2 and 3 above, vendor invoices were split apparently to circumvent the EC single purchase dollar limit.

Example 2, Software annual license renewal fee

Vendor	Transaction ID	Transaction Amount	Use Tax Amount	Transaction Date
PRESAGIA CORP	1705220923	3,122.62	242.00	5/19/2017
PRESAGIA CORP	1608260098	3,050.00	0	8/24/2016

On line 1 above, use tax was erroneously recorded for a payment of an annual software renewal fee.

Example 3, Equipment inspection fee

Vendor	Transaction ID	Transaction Amount	Use Tax Amount	Transaction Date
HEIDELBERG ENGINEERING IN	1804270494	13468.75	0	4/27/2018
HEIDELBERG ENGINEERING IN	1810170468	3,850.00	298.38	10/17/2018

On line 2 above, use tax was erroneously recorded for an equipment inspection fee.

As the above examples show, the use of data mining techniques can be an effective means of locating noncompliant transactions from within large datasets³. AMAS shared the results of our analysis with the members of the ECPT, who agreed this type of analysis by vendor is a useful means of isolating use tax charging errors. This use tax data mining example illustrates just one of the ways in which we believe a greater reliance on data analysis tools could assist the work of the ECPT. Although the EC Manager system is likely to be replaced as part of UCSD's Enterprise System Renewal (ESR) initiative, the data analysis skills acquired by the ECPT will continue to be relevant in the ESR environment.

³ The entire set of worksheets as well as the queries used to create them were provided to the ECPT for future use.