MCIT CAPITAL PURCHASING ANALYSIS

PROGRAMS AND OPERATIONS ANALYSIS
STUDENT TEAM

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EXECUTIVE SUMMARY

Medical Center Information Technology handles all the purchases of information technology related hardware and software. Currently, the capital purchase order process experiences wide variation and high throughput times which in turn causes decreased customer satisfaction. The Programs and Operations Analysis student team was organized to help management gain a better understanding of the current process and how to make this process more efficient.

The student team approached the analysis by creating a requisition tracking form that would allow them to locate duplicate action, create a physical map representation, and track approval times. On the basis of this form, interviews were conducted with Sandi Richards-MCIT Purchasing Team agent, David Rose-Manager of Capital Budgets, William Penpraze-Purchasing Agent for Health Sciences Support Team, and Andy Supers-Manager of Computer Procurement. In addition, regular meetings were held with Kert Reese, Don Johnson, and Karen Erhardt-Domino.

Through the completion of the student team’s analysis, the current process was charted. The team searched for non-value added procedures, and sources of variation. From this analysis, several areas of improvement were uncovered.

It was discovered that in some cases, both MCIT and University Purchasing solicit bids from vendors. However, University Purchasing is the only department authorized to award bids. The student team recommends eliminating the bidding process from MCIT, thus trimming two days from the current process. Another short term recommendation is to have a single representative from each department submit purchase requests to MCIT. This person would be familiar with the purchasing process and strategic planning efforts. This would facilitate the interaction between the customer and MCIT. A final short term suggestion is to create an MCIT purchasing guide. This will allow a customer to have a better understanding of the steps in which his/her order must go through.

The recommendation which will do the most to reduce throughput time, reduce variance, and increase customer satisfaction is a long term goal. Making the system completely on-line will eliminate the time required to move the requisition through different departments. It will also reduce the amount of times a requisition is typed. In addition, it will reduce the effects of human error by checking to make sure that the proper entries have been made. The on-line system will allow customers to quickly and easily determine the status of their orders.
1.0 Introduction

Medical Center Information Technology (MCIT) has recently restructured its organization due to the formation of the Clinical Delivery System (CDS) at the University of Michigan Medical Center. The purpose of this was to standardize supplies and equipment used within the Medical Center. MCIT handles the purchases of all information technology related hardware and software. Capital purchases are defined as any single purchase over $500 or any combined purchase over $2500.

1.1 Purpose and Background

The Programs and Operations Analysis Student Team was organized to help management gain a better understanding of the existing MCIT capital purchasing process. This allows for improvement in standardization efforts and control, potential cost reduction, and customer satisfaction.

Previous analysis of the process shows that it takes 43 - 89 days for the entire completion of a purchase order. This wide variation has historically lowered customer satisfaction. Because MCIT is the first entity in the process to handle the purchase request, they often bear the burden of customer dissatisfaction.

In the current analysis, the student project team hopes to identify and eliminate any non-value adding steps and delays in the process. By doing so, throughput time of the process decreases and customer satisfaction increases as a result.

2.0 Approach and Methodology

To help understand the MCIT capital purchasing process, a requisition tracking form has been developed by the student project team. This form covers essential information needed for analysis of the work flow within MCIT (See Appendix A). The student project team also conducted interviews with people involved at various levels in the purchasing process in order to obtain further details needed to understand the work flow process. Interviews were conducted with Sandi Richards-MCIT Purchasing Team agent, David Rose-Manager of Capital Budgets, William Penpraze-Purchasing Agent for Health Sciences Support Team, and Andy Supers-Manager of Computer Procurement. In addition, regular meetings were held with Kert Reese, Don Johnson, and Karen Erhardt-Domino.
2.1 The Requisition Tracking Form
This form is designed to cover all possible aspects of the requisition process within MCIT. A single form must be filled out for each separate physical location the requisition appears. All information specified on the form allows for proper tracking of actions particular to requisition approval. This allows the student project team to locate duplicate actions within the process, represent the work flow in terms of physical location, and track the time spent for actual approval.

2.1.1 Locate Duplicate Action
The current flowchart available for the capital purchasing process does not allow for analysis of non-value adding steps. The requisition tracking form requires specific information to analyze for such steps.

2.1.2 Physical Map Representation
The requisition tracking form provides the student team with an opportunity to look at the work flow in physical location aspects. A topographical analysis may determine further areas within the process that cause problems in prompt completion of requisition approval.

2.1.3 Precise Tracking of Approval Times
The current flowchart for the capital purchasing process shows wide variation of times spent at separate locations. The requisition tracking form is designed to achieve a better understanding of time spent for approvals and exactly where the variation occurs.

2.2 Benchmarking
The project team attempted to use benchmarking strategies to help understand the process at MCIT, as well as processes at other institutions. However, the team was unable to collect this information.

3.0 Current Situation
The majority of the project effort was to define the current MCIT Capital Purchasing Work Flow Process. The following information was obtained from the interviews with respective personnel.

3.1 Work Flow Process
The work flow process in the MCIT capital purchasing process involves many entities. Refer to Figure 1 for the current process work flow chart.
Customer completes WEB form

- electronically sent to:
  - MCIT Associate Director/Administration and Planning
  - Head of Customer Department (for 48 hr. Disapproval)

Courier every afternoon

MCIT Purchasing Team
4-10 day back log includes:
1. 48 hr. Disapproval
2. Customer changes mind
   if no, Sandi Richards then:
   1. Checks for parent tag
   2. Bid process (2 days)
   3. Types requisition
   4. Original sent

Courier every afternoon

1. Checks with strategic planning
2. If okay, signs it
3. Original sent
   (24 hour process)

Capital Programs (2.8 day process)
- Capital Equipment
  1. Log into database
  2. Capital Budget
  3. Verify fits budget
  4. Encumber account
  5. Verify proper account #
- if no
  - if yes send to Health Sciences Support Team
- if medically oriented
  - send to Health Sciences Support Team
- if general computer supplies
  - send to Computer Procurement Support Team

Property Management
1. Creates asset tag sheets
2. Review requisition and check purchasing terms
3. Makes copy of requisition - send to Finance
4. Original sent to Purchasing

University Purchasing
1. Log into database
2. Bid process
3. Create purchase order
4. Send to order entry - Wolverine Tower

Figure 1. The MCIT Capital Purchasing Process
3.1.1 Customer
A customer completes a purchase request electronically by accessing the MCIT Purchase Request Form on the World Wide Web via NETSCAPE. The purchase request is then sent to the MCIT Associate Director/Administration & Planning, the head of the customer’s department, and the MCIT Purchasing Team.

3.1.2 MCIT Purchasing Team
The MCIT Purchasing Team has a four to ten day backlog. This includes a 48 hour disapproval process by the Associate Director of the customer’s department and time for a customer to change his/her mind. If the customer doesn’t change his/her mind, the Purchasing Team performs several functions. They first check to see if the item can be parent tagged. Parent tagging is the process of grouping items together that are related to the same project in order to maximize capitalization. They then go through a bidding process with vendors that takes approximately two days. A capital requisition is then typed up and bid prices from different vendors are written on the back of the capital requisition and sent via courier to the MCIT Associate Director. The requisitions are sent via courier on a daily basis.

3.1.3 MCIT Associate Director
The Associate Director, Karen Erhardt-Domino, receives the capital requisition from the MCIT Purchasing Team and checks to see if it fits with the strategic plans of the University of Michigan Medical Center. If it fits, she formally approves the capital requisition by signing it. This whole process takes 24 hours. The capital requisition is then sent via courier to Capital Programs in the UMH Project Support Office.

3.1.4 Capital Programs
Capital Equipment logs the capital requisition into the database after it is received. Capital Budget then verifies proper account number, checks that the order fits the budget, and encumbers the budget.

If there is any problem with the capital requisition, it gets sent back to the customer. If no problems exist, the capital requisition is sent to Property Management.

Property Management prepares asset tag sheets. The capital requisition is then reviewed and, if okay, it is signed. A copy of the capital requisition is sent to Finance, and the original copy is sent to University Purchasing. Capital Programs averages 2.8 days for their process completion.
3.1.5 University Purchasing

If the capital requisition is medically oriented, it is sent to the Health Sciences Support Team. However, if the capital requisition involves general computer supplies, it is sent to Computer Procurement. At Computer Procurement, the capital requisition is logged into the database and the bidding process with vendors occurs all over again before the purchase order is prepared. University Purchasing is the only department authorized to award bids. The completed purchase order is sent to order entry at the Wolverine Tower.

It is important to note that order entry at Wolverine Tower appears to be understaffed for the large volume of documents which need processing.

4.0 Alternatives Considered

Throughout the analysis of the work flow, several alternatives became evident specific to problems areas. It is understood that some of these alternatives are not “new” to the MCIT administration but need to undergo complete evaluation before elimination.

4.1 Making System Electronic

One idea is specific to the elimination of paper flow. By making the process completely electronic, it is necessary to only type the requisition once. As the requisition is routed throughout the process, changes and authorizations could be made without retyping. The process of retyping is a non-value adding step. In addition, making the process on-line would eliminate the physical movement between departments. An electronic system is capable of accurate status checking that would eliminate continuous logs and status reports on separate software.

In order to make the process on-line, it is necessary to have software that would provide for an electronic authorization system. The software would be required to properly route the requisition throughout the process.

4.2 Change the Disapproval Process

Another consideration is to remove the forty-eight hour disapproval process that is currently in place for the head of the customer’s department. One way in which this was proposed would be to have the head of the department explicitly approve/disapprove an order before it is sent to MCIT. This cuts two days out of the MCIT process.
4.3 One Customer from Each Department
This alternative entails designating a single person from each department to interface with MCIT. This designated customer would become familiar with strategic planning goals and work towards standardization of the information technology within his/her department. By working concurrently with strategic planning and interdepartmental projects, orders could be placed on time and reduce the amount purchased on recharge accounts. (Recharge accounts are used for impromptu purchases that are needed on an emergency basis.)

The designated customer would be in charge of presenting purchase requests in the most complete form possible and ensure that none of the information would change after it reached the MCIT process. This would eliminate the rework created by customers changing their minds on orders. Having a designated customer per department would also allow for additional control on the purchasing process in terms of authorization.

5.0 Findings and Recommended Action Plan
As the student team worked towards understanding the current MCIT purchasing process, one problem became quite evident. There is a lack of communication between the different departments involved in the purchasing process. As the project evolved, conflicting facts of what exactly occurred became a problem for proper analysis.

5.1 Short Term Recommendations
The following are recommendations which can be implemented quickly and easily. These recommendations serve to shorten throughput time and improve customer satisfaction. Please refer to Figure 2 for an adjusted work flow chart representing the potential changes.

5.1.1 Eliminate Redundant Step
In some cases, MCIT solicits bids from vendors. However, University Purchasing is the only department permitted to award bids. It is critical for University Purchasing to ensure that fair bidding protocol is used. As a result, the bids that are solicited within MCIT are not used. Therefore, this step does not add to the efficiency of the process.

It was estimated that MCIT takes two days to solicit bids. By removing this process, it is possible to cut this time out of the process. This may reduce some of the backlog that is in the current process.
5.1.2 One Representative From Each Department
As explained in section 4.3 of this report, it is recommended that a single person per department be designated for capital requests. This person would be involved with strategic planning efforts to aid in standardization within his/her own department. This will reduce the amount of variation created from bids. The number of capital blanket P.O.’s will increase as standardization efforts increase. Since the designated customer will also be aware of interdepartmental projects, it would be his/her responsibility to order the necessary equipment on time and parent tag as appropriate. This would reduce the variances in throughput time within MCIT due to investigative checks done by the MCIT Purchasing Team. These investigative checks pertain to parent tagging and strategic planning efforts.

Having a single representative per department aids in the authoritative control of the capital purchasing process. This is extremely important to financial analysis and budgeting constraints.

5.1.3 Availability of an MCIT Purchasing Guide
A recommendation that will immediately help with customer satisfaction is the creation of an MCIT Purchasing Guide. This guide will not only include an explanation of the entire capital purchasing process, but also explain where potential delays can occur and offer advice on how to avoid such delays. This will aid in reducing human errors and preventing rework due to these errors.

The short-term recommendations can be implemented in a shorter time span than the long-term recommendation. If these recommendations were to be accepted, it is estimated that the new total throughput time would range from 40 to 61 days.

5.2 Long Term Recommendations

The greatest opportunity to improve the current process is to make it completely on-line. This new system would reduce throughput time and increase customer satisfaction in several different ways. Please refer to Figure 3 for the adjusted work flow chart representing the on-line system. The system being recommended would need to contain the following elements:

1) The ability to verify that proper authorization and checks had been made.

2) The ability to route the requisition through the different departments that it needs to go to.
Designated Customer receives purchase request from department:
1. checks with strategic planning efforts
2. verifies all information is correct
3. checks for potential parent tags within departmental projects

Designated Customer completes WEB form electronically sent to:
- MCIT Associate Director/Administration and Planning
- Head of Customer Department (for purchase awareness)

Sandi Richards then:
1. Types requisition
2. Original sent

Head of Customer Department (for purchase awareness) then:
1. Verify strategic planning
2. If okay, signs it
3. Original sent (24 hour process)

MCIT Purchasing Team
2-8 day back log
Sandi Richards then:
1. Types requisition
2. Original sent

University Purchasing
1. Log into database
2. Bid process
3. Create purchase order
4. Send to order entry- Wolverine Tower

Figure 2. Short Term Implementation
3) The ability to allow customers to check the status of his/her order directly.

First, it would remove almost all paper flow from the process. Second, it would eliminate the time that it takes for a document to travel from one entity to another. This would reduce throughput time, and the cost required to have the document sent to the respective entities. In addition, the system would help to reduce the effects of human error, such as having the wrong account number, by automatically checking this information before the requisition is forwarded. Thus reducing rework, and therefore reducing throughput time. Also, by having the document flow electronically, it would no longer be necessary to retype the requisition. Changes and amendments could be made on-line. This also reduces rework and throughput time.

In addition to customers being more satisfied because the time required to acquire items is reduced, a computerized system will also allow for easy tracking of the orders. Customers will then be able to directly determine the status of his/her order, reducing the amount of telecommunication used for determining the requisition’s location.

It is understood that it will take some time to implement this system. If the short term recommendations were implemented before making the system on-line, this would aid in the personnel adjustment to an on-line system. In total, the on-line system would reduce the variation and throughput time dramatically. The student team estimates an on-line system throughput time would be 14 to 30 days. The student team recognizes that the bidding process and vendor order preparation are the sources of greatest variation for which the team could not analyze on a micro-level. The standardization efforts of University-wide Purchasing will help aid in the reduction of this variation.
Designated Customer receives purchase request from department:
1. checks with strategic planning efforts
2. verifies all information is correct
3. checks for potential parent tags within departmental projects

Designated Customer completes WEB form electronically sent to:
- MCIT Associate Director/Administration and Planning
  1. Verify strategic planning
  2. If okay, electronically authorizes it.
- Head of Customer Department

Electronically routed

MCIT Purchasing Team
1 - 3 day backlog
Agent makes necessary adjustments on requisition

Electronically routed

Capital Programs (2.8 day process)
- Capital Budget
  1. Verify fits budget
  2. Encumber account
- Property Management
  1. Creates asset tag sheets
  2. Route copy of requisition to Finance
  3. Route requisition to Purchasing:
     - if medically oriented route to Health Sciences Support Team
     - if general computer supplies route to Computer Procurement Support Team

University Purchasing
1. Bid process - assign vendor
2. Create purchase order
3. Send to order entry (Wolverine Tower)

Figure 3. Long Term Implementation
APPENDIX A

**Capital Purchase Order Process Programs and Operations Analysis Student Team**

**Requisition Tracking Form**

Sender: __________________________ via: e-mail ☐ campus mail ☐ person ☐

Sender's Location: __________________________

received by: __________________________ @ new location: __________________________

Time spent at new location: _______ # days and/or _______ # hours

<table>
<thead>
<tr>
<th>Order of Approval</th>
<th>Purpose</th>
<th>Ave. Time to forward</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explanation</td>
<td></td>
</tr>
</tbody>
</table>

1. Title of signature required: __________________________ action required: __________________________

2. Title of signature required: __________________________ action required: __________________________

3. Title of signature required: __________________________ action required: __________________________

4. Title of signature required: __________________________ action required: __________________________

Comments

__________________________________________________________