Assessing IT Service Outcomes: Summary Analysis for the Higher Education TechQual+ Project at the University of Memphis

Information Technology Division
December 2011 – January 2012

This is the third school where I’ve studied and I’ve overall been very impressed with UM technology! Only complaint that comes to mind is how complicated it is to pay for more pages to print (beyond the 500 quota), but that’s really it.

Mobile, mobile, mobile. I would like to see the university have a strategic implementation for mobile devices and applications, specifically related to teaching and learning. I would also like to see the university propose and incentivize an open education, including open e-textbooks, and open educational resources policy that would encourage the use of such resources and potentially reduce costs dramatically for students.

The slowness and response times of Banner and the internet during the first three weeks of each registration period and the beginning of each semester.

Desire2Learn is inadequate for the pedagogical choices I am exploring. It lacks capacity for video/audio/groupware, and email is problematic. I’d urge you to explore any other course management system.

I’m not convinced that these surveys will be taken seriously. I have filed help tickets related to serious issues. Months later the issue has not been resolved. After years of this, another survey looks good but will it make a difference?

-Sample user comments submitted with the TechQual+ survey

TechQual+ Survey

The Higher Education TechQual+ Project provides IT leaders and administrators with the tools to assess, analyze, and report on the effectiveness of technology services at their institution. Based on the findings of focus groups at participating institutions, the TechQual+ project has articulated a set of generalizable IT service outcomes that are expected of IT organizations by faculty, students, and staff within higher education. The TechQual+ core survey contains 18 items designed to measure the performance of the following three core commitments: 1) Connectivity and Access, 2) Technology and Technology Services, and 3) The End User Experience. The UoM also added two open-ended questions that asked participants to comment on their current and future technology needs.

Key Findings

- The UoM community, users of Information Technology (IT) services, does not distinguish the administrative responsibilities between various IT support units on campus. The user community sees IT support and services as one environment.

- As to the performance of the UoM networks, systems and applications, again, the user community does not distinguish IT performance metrics by categories of infrastructure services. When systems do not perform as expected, any number of IT services can be cited as poor performers.
In general, users wanted better or more reliable network performance. The campus wireless network (Wi-Fi) was singled-out by the user community in their comments as not meeting their performance expectations.

The user community indicated that core myMemphis portal content should be made available via a mobile app.

ITD’s ability to provide a reliable Virtual Private Network (VPN) to off-campus users and to employ comprehensive search capabilities within our main web. Both items continue to be service issues for the UoM user community.

Matching the proper technology with the required technology for each course section taught continues to be a challenge for the UoM.

In evaluating the detailed responses and comments for some of the more problematic services areas, the responses had more to do with broken or inefficient business processes, rather than direct technology issues.

Many in the user community expressed the need or desire to be provided with basic technology training.

The user community mentioned the lack of depth of knowledge of the average Help Desk (HD) support personnel. Most of these responses also recognized that it is probably unreasonable to expect that entry level HD support personnel would have the deep skill sets that many faculty and staff might require.

Many in the user community felt that there was a lack of responsiveness to submitted HD tickets and to the timely communications back to the user community about the updated status of their HD service tickets.

Many in the user community appreciated the ability to provide feedback via this survey; however, several felt that the survey results will not be acted upon and that real change will probably not occur.

Further analysis of the effectiveness of technology service by distinct groups (students, faculty or staff), yielded the following conclusions:

- Students, as a group, did not indicate any single area that their technology service expectations were below their minimum standard. On average, it appears that the students’ IT service expectations were being met.
- Faculty responded that their IT service expectations were below the minimum in 16 of the 18 core survey questions or areas that they rated.
- Staff responded that their IT service expectations were below the minimum in 6 of the 18 core survey questions or areas that they rated.

Summary Analysis

Respondents

1612 respondents (students, faculty and staff) clicked-on the link to the survey. 1268 answered one or more of the survey questions with 657 completing the entire survey. One interesting fact that came from the data collection of the survey was a side experiment that was conducted. During the first four weeks the survey was open, the only notification about the survey came via social media (Twitter and Facebook.) The survey,
located in the announcements section of the myMemphis portal yielded 622 responses via social media notifications with the remaining 646 responses coming from traditional group email notifications to students, faculty and staff during the final week of survey data collection.

### Total Population / Respondents

<table>
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<tr>
<th>Population Size (N)</th>
<th>Respondents (n)</th>
<th>Respondents (n) %</th>
<th># Complete</th>
<th>Response Rate</th>
</tr>
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<td>1612</td>
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<td>671</td>
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### Category: University Role

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<tr>
<td>Totals</td>
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<td>1268</td>
<td>0%</td>
<td>657</td>
<td>52%</td>
</tr>
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</table>

Legend: Pop (N) = Total Population; Resp (n) = Sample Size; Resp (n) % = n/N x 100; # Comp = # Complete Surveys; Resp Rate = # Comp/x 100

### Category: Gender

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Legend: Pop (N) = Total Population; Resp (n) = Sample Size; Resp (n) % = n/N x 100; # Comp = # Complete Surveys; Resp Rate = # Comp/x 100

### Survey Results

**Zones of Tolerance** – This results section shows the relation of our survey respondents (adequacy gap indicated in orange) to predetermined zones of tolerance, (indicated by the grey bars.) The zones show the survey range of minimum to desired and the adequacy gap of minimum to perceived.
Radar Graph – The radar graph shows the perceived to desired and the perceived to minimum ratios:

Data Table – The rows shaded red indicate a negative service adequacy gap score.

### Connectivity & Access
*Measures service quality of network access and the ability to access online services*

<table>
<thead>
<tr>
<th>#</th>
<th>When it comes to...</th>
<th>Min</th>
<th>Des</th>
<th>Per</th>
<th>Adep</th>
<th>Supr</th>
<th>n^*</th>
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<tbody>
<tr>
<td>1</td>
<td>Having adequate capacity (speed, bandwidth) when using the wired network</td>
<td>Mean</td>
<td>6.83</td>
<td>8.56</td>
<td>7.27</td>
<td>0.44</td>
<td>-1.29</td>
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<td></td>
<td></td>
<td>Dev</td>
<td>0.83</td>
<td>1.45</td>
<td>1.50</td>
<td>1.39</td>
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<td>2</td>
<td>Having adequate capacity (speed, bandwidth) when using the wireless network</td>
<td>Mean</td>
<td>6.68</td>
<td>8.41</td>
<td>6.89</td>
<td>0.21</td>
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<td></td>
<td></td>
<td>Dev</td>
<td>1.65</td>
<td>0.93</td>
<td>1.65</td>
<td>1.69</td>
<td>1.64</td>
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<tr>
<td>3</td>
<td>Having wireless network coverage in all the areas that important to me as a faculty, student, or staff member</td>
<td>Mean</td>
<td>7.17</td>
<td>8.56</td>
<td>7.21</td>
<td>0.04</td>
<td>-1.36</td>
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<td></td>
<td></td>
<td>Dev</td>
<td>1.72</td>
<td>0.89</td>
<td>1.69</td>
<td>1.64</td>
<td>1.61</td>
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<tr>
<td>4</td>
<td>Having a university network that is reliable, available, and performs in an acceptable manner</td>
<td>Mean</td>
<td>7.57</td>
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<td>5</td>
<td>Having access to important university provided technology services from my mobile device</td>
<td>Mean</td>
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<td></td>
<td>Dev</td>
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<td>1.77</td>
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<tr>
<td>6</td>
<td>Having access to important university provided technology services from off campus when at home or traveling</td>
<td>Mean</td>
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<td></td>
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<td>Dev</td>
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<td>1.70</td>
<td>1.63</td>
<td>1.62</td>
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Legend: Min = Minimum Level of Service; Des = Desired Level of Service; Per = Perceived Service Quality; Adep = Adequacy Gap Score (perceived - desired); Supe = Supremacy Gap Score (perceived > desired); n^* = Total Respondents Who Completed Item; Mean = Statistical Mean; Dev = Standard Deviation; Red Color = Perceived < Minimum; Green Color = Perceived > Desired; Yellow Color = Potential Problems Areas
Appendix: Open-Ended Questions – The UoM asked two open-ended questions. Here is the analysis of the two opened ended questions:

Are there any technologies in use at the U of Memphis that you would like to see changed? Describe those technologies and the changes you would like to see implemented.

In order to derive some type of statistical meaning from this open-ended question, each answer was reviewed and categorized by a particular subject matter. Here are the top results of the responses to this question:

- Users that desired more or improved computer labs – 38
- Users that had complainants about ERP services (predominately, Banner and Portal) – 19
- Had issues with the wireless network service – 18
- Complained about current or desired a new e-Courseware LMS – 15
- Desired mobile technologies and content (mobilization of portal content) – 10
- Users wanting better IT support – 7
- Users that desired better or more computer applications (software) – 7
- Users who wanted better or more reliable network performance – 7
- Users who wanted to see more smart classrooms – 7

In your opinion, are there any forms of technology that are not in use at the U of Memphis that you would like to see implemented? Describe those technologies that you feel are missing and how they should be used at the U of Memphis.

This open-ended question did not result in any groupings of similar data. Each answer was somewhat unique and very few were related. Some of the responses that were related dealt with wanting to see a greater adoption of e-textbooks, and the comprehensive use of course-based podcasts. A couple of anecdotal posts that were interesting dealt with the creation of a digital arts media center and giving faculty (within a particular department) beta access to new or emerging software for use in the classroom.

Comment Analysis and Proposed Action Plans

Appendix: Respondent Suggestions – Each of the eighteen core questions in the survey allowed for the respondent to provide open-ended comments to each question. Using these responses, a generalized analysis and action plan was constructed for each survey question. Given the similarity of questions and responses, there are instances in the analysis (and subsequent actions plans) where these questions are grouped together. The goal of the summary analysis and the action plans is simple: The UoM understands the issues that have been raised by our user community and is proactively working to address and resolve these issues. (Please note: Our final resolutions to our proposed action plans (where appropriate) are listed in green.)

Connectivity & Access - Measures service quality of network access and the ability to access online services

1) Having adequate capacity (speed, bandwidth) when using the wired network

Most comments and responses to this question mostly dealt with the speed and performance of our ERP systems (Banner) and not just the core network. For many users the speed of the Banner system and other related core ERP systems are translated into a slow network performance experience.

Action Plan

Campus Network

- During the summer and early fall, ITD reviewed and upgraded the entire campus network infrastructure to accommodate a 10-Gigabit backbone network. Every router and network switch was replaced on the core network.
- Network firewalls, load balancers and other key network components were upgraded.
- Configuration analysis with our key network vendor (Cisco) is continuous and on-going. (During the Fall 2012 semester, and based on analysis work that took place, major network configuration changes were made to the core network infrastructure. Overall bandwidth, routing configurations and network security protocols were significantly improved.)
ERP Performance on campus network

- An “end-to-end” analysis is currently being conducted with external vendors to increase performance and enhance the end-user experience. (As mentioned above, the network analysis and subsequent network configurations changes made during the Fall 2012 semester improved overall performance.)
- The Banner infrastructure is constantly being reviewed to improve performance. (As a result of working on a Proof of Concept (PoC) project with our Banner infrastructure, also during the Fall 2012 semester, ITD discovered and implemented several configuration enhancements that improved the overall system performance.)
- New monitoring tools are being added to detect problems earlier.
- Working with other related ERP vendors (SciQuest, for example) to improve the user experience.

(2) Having adequate capacity (speed, bandwidth) when using the wireless network

(3) Having wireless network coverage in all the areas that are important to me as a faculty, student, or staff member

Wireless issues – (WiFi)- Given the emphasis and work that has gone into building-out one of the better campus wireless infrastructures on any college campus – the UoM was very surprised at the survey results to these two questions. Getting at the heart of these service issues required further interviews with students across our campus. One of the primary problems we discovered was the majority of our students were using our guest (Public) wireless network and not authenticating their wireless devices to our core campus wireless network. (Please note: the guest wireless network is intended for occasional guests to our campus. This guest network, by design, limits the use of on-campus network resources and has several service limitations.) Additionally, analysis of other survey responses to these questions yielded concerns where users wanted better wireless network coverage: Library, South Campus, Rec Center, Richardson Towers, Ball hall and both major parking lots.

Action Plan

Campus Wireless Network

- Educate and provide a simple solution in getting students to register their wireless device so they can use the authenticated wireless network. Building a NAC (Network Access Controller) to replace the current NetReg system. This new system should be operational by Fall 2012. (The NetReg system was deprecated and Phase 1 of the NAC implementation was completed during the Fall semester. Even though the initial implementation of the NAC (Phase 1) had some early service challenges, the NAC virtually eliminated all the issues students encountered when connecting to the authenticated wireless network.)
- ITD held a town hall meeting in early March with residents of the Park Avenue campus to address their issues about the wireless network. Follow-up meetings will occur in the coming months.
- Re-designing pieces of the campus network to include more wireless access points. (Beginning during the Fall of 2012 and into Spring 2013, ITD replaced the entire wireless infrastructure for the graduate student housing facility on the Park Avenue campus with a new 4g wireless infrastructure.)
- Experimenting with new technologies to improve wireless performance.
- Adding an experimental BYOD wireless classroom beginning in Fall 2012. (The first BYOD classroom was constructed during the Summer 2012 term and went operational in Fall 2012. Four more BYOD classrooms were implemented by the Spring 2013 semester.)
- Investigating the costs in providing wireless network services to public areas around buildings and parking lots.
(4) Having a university network that is reliable, available, and performs in an acceptable manner

In general, users wanted better or more reliable network performance - as detailed in questions 1, 2 and 3.

Action Plan

Campus Network Performance

- As mentioned in the action plans in questions 1, 2 and 3 – several steps are being taken to address overall network and wireless network performance.
- The UoM will also implement an IPS (Intrusion Prevention Software) during the next calendar year. This system will provide our commodity-based and high-speed, research networks with elevated security capabilities. (The IPS system was implemented during 2012 and was instrumental in preventing several external intrusion attempts.)

(5) Having access to important university provided technology services from my mobile device

The prevailing comments surrounded having the myMemphis content available via a mobile app.

Action Plan

Mobile

- A mobile app containing core data found in the myMemphis portal was developed. (There is an Apple iOS version available in the App store and an Android version also available for download in Android Marketplace.) – [http://www.memphis.edu/mobile/](http://www.memphis.edu/mobile/) – (The UoM Mobile app is already in its 3rd major build and continues to be a popular downloaded app for our students.)
- Form a standing Mobile Development Task Force (MDTF) group. Should be completed by 4/6/12 - [http://tinyurl.com/cfmv8a8](http://tinyurl.com/cfmv8a8) - (The assembly of the task force was completed and now continuously serves as the initial governance for all UoM app mobile app development.)
- Establish multiple channels to publish mobile information and receive feedback
- Establish standards for mobile application development and mobile web markup
- Identify opportunities for collaboration with colleagues at other institutions

(6) Having access to important university provided technology services from off campus when at home or traveling

The ability to provide a simple Virtual Private Network (VPN) and to utilize Remote Desktop Protocol (RDP) continues to be an issue for off-campus users.

Action Plan

VPN Replacement

- The current VPN is nearing end-of-life; a team will be formed to address, recommend and implement a new VPN solution over the next 12 months. (Changes were made to the current VPN system which resulted in improved VPN performance. ITD will continue to investigate emerging VPN services.)
- Alternative access to core teaching and learning software packages will be explored, including the investigation of anytime/anywhere software delivery. One pilot has been completed and rejected as an alternative solution. (ITD spent a significant amount of resources during the past year in developing a new “software, anytime, anyplace” solution. The campus pilot for this new solution began in Spring 2013.)

**Technology & Technology Services** - Measures service quality of technology services such as software applications or classroom technology

**(7) Having a university web site that provides timely and relevant information**

The ability to search items within our UoM web site appears to be a service issue.

**Action Plan**

**Internal Web Searches**

- University web content providers will be reminded of the importance of using good web page titles, adding keywords, and making other content improvements to make it more likely that the UofM search utility (Google appliance based), any external search engines that have indexed our site such as Google, Bing, Yahoo, will be more likely to be located and displayed near the top of the page results list. (For 2013, ITD has implemented upgraded Google search services into the UoM’s web infrastructure.)

- The Division of Communications, Public Relations and Marketing will be asked to review the navigation and flow of unit websites and improve the availability of key content items beginning this year. (The first phase of the UoM’s new web site re-design began in January, 2013. One of the major benefits of the new UoM web site is the implementation of a responsive web design. This responsive design will allow the University to display all web content across any mobile device and without having to re-code or build separate mobile apps to serve up this content.)

**(8) Having a sufficient number of online (i.e. web based) services that are helpful to me**

The responses and comments to this survey question did not yield any definitive service issues to address.

**Action Plan**

**Online Services**

- The UoM implemented a new web Content Management System (CMS) in October/November 2011. The new CMS will significantly improve and simplify the process by which web content providers can create and maintain web content. (The new CMS tool was a critical component in the re-design effort for the development of the new UoM web site.)

**(9) Having university information systems (finance, HR, student, library, or portal) that are easy to use and are helpful to me**

**(10) Access to timely and relevant information from university information systems (finance, HR, student, library, or portal) necessary to be successful in my role as a faculty, student, or staff**
(11) Having online (i.e. web based) services that perform (or respond) in an acceptable manner

In performing the analysis of these three survey responses, and despite being evaluated as problematic technology service areas, these detailed responses had more to do with broken business processes, rather than direct technology issues.

Action Plan

Improved Business Processes

- From the analysis, identifiable business processes will be sent to the process improvement team this spring for their review, evaluation and possible process change. (A full review of the administrative process improvements can be found here: http://www.memphis.edu/processimprovement/teams.php)

(12) Having technology within classrooms or meeting areas that enhances the presentation of information

Matching the proper classroom with the required technology for each course section being taught continues to be a challenge for the UoM.

Action Plan

Classrooms and Technology

- Academic Affairs will review the comments and continue to address with our academic departments the need to place the proper section into the appropriate classroom. (The new capabilities of the recently implemented EMS classroom scheduling system should help the Registrar’s office in matching instructor’s needs to the available classroom technology. ITD continues to help build and upgrade classroom technologies across the University.)
- The UoM will be implementing a new room and event scheduling system over the next few months. This new system should improve and enhance room/course scheduling capabilities. (EMS was implemented during 2012 and now provides the UoM with an enhanced platform for scheduling events and spaces on all our campuses.)

The End User Experience - Measures service quality of training, technology support, and the end user experience

(13) Getting training or self-help resources that help me become more effective with technology services at my university

Though not defined by the survey as a large service deficit, many users expressed the need or desire to having basic technology training.

Action Plan

Basic Technology Training

ITD will recommend to the UoM the need to review available, online technical training services like, Lynda.com. (ITD, ALC, HR and Academic Affairs will work to see if there are budget funds available to implement online, self-paced IT training tools.) – (Small purchases of Lynda.com content were licensed during 2012. This type of service can provide “just in time” technical training to UoM staff.)
(14) Support staff who are knowledgeable and can assist me with resolving problems experienced with technology services at my university

(15) Support staff who are consistently courteous and ready to respond to my request for assistance with university provided technology services

Many of the suggestions mentioned the lack of depth of knowledge of the average help desk support personnel. Most of these responses also recognized that it is probably unreasonable to expect that entry level support personnel would have the deep skill sets that many faculty and staff might require. Suggestions to these two questions were very interesting.

Action Plan

IT Support

- ITD will continue to work with the Help Desk (HD) staff, LSPs and the ALC to improve support opportunities for our students, faculty and staff. (In 2012, the ITD Help Desk began a best practice of reviewing at least 90% of all submitted helpdesk tickets for accuracy, clarity and possible training opportunities.)
- ITD will work with other IT support units at the UoM to explore alternative support models. (Beginning in 2012, ITD and other service units began exploring new ways to collect support request. The newly formed Shared Services Center will utilize the helpdesk ticketing system into their daily processes.)

(16) Getting timely resolution to problems I am experiencing with technology services at my university

This service issue is campus issue, rather than just a service issue for ITD. The suggestions and feedback to this question acknowledges the complexities of providing upper tier support. One service shortcoming that is shared by every unit on campus involves Help Desk (HD) ticket updates and timely communications back to the user community about the status of the HD service ticket.

Action Plan

Technology Support Services

- ITD will continue to work with the LSP community to conduct training and to continue the monthly ITD/LSP meetings. (ITD and LSP meetings continue to occur monthly. When needed, ITD conducts additional meetings with LSPs on critical, time-sensitive issues.)
- ITD will work with other divisions and departments to review outstanding and non-responsive HD ticket processes. (In 2012, ITD worked with specific units on campus to help them address the issue of non-responsive helpdesk tickets. This work is continuous and on-going.)

(17) Opportunities to provide feedback regarding technology services at my university

(18) Participating in a university wide community of end users seeking to make the best use of technology resources

Many appreciated the ability to provide feedback via this survey; however, just as many felt that the survey results will not be acted upon and that real change will probably not occur.
**Action Plan**

**User Feedback for Technology Services**

- Continue to utilize the TechQual+ survey each year and to publish the survey results with an action plan — (ITD conducted a second TechQual + survey for 2012/2013, the results of that survey are pending.)
- Share the results of other national technology surveys that the UoM participates in — (In 2012, ITD shared in detail, the results of several national surveys with our various IT governance groups.)
- Improve the responses to all HD tickets that are received and attempt to reduce the current non-responsive, open HD tickets by 50%. (Please see the previous response, above.)
- Promote to the UoM user community the use of the HD ticketing system to track all known issues
- Continue the random sampling of closed HD tickets (Please see the previous response, above.)
- Continuation and refinement of the IT Governance process at the UoM