# User Satisfaction and Usage of the Self-Check System at Greensboro Public Library's Benjamin Branch

*Action Research Project*

By

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LIS 600

# Table of Contents

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## Introduction

The Greensboro Public Library (GPL) consists of a system of seven branch libraries, one historical museum, and one Reading Railroad.  During the 2008-2009 fiscal year, the GPL reported 2,759,567 visits resulting in 1,561,566 items checked out by an estimated 236,007 patrons cumulatively[1].

Recently the GPL reopened the Benjamin Branch after a remodeling and expansion project that took a little over one year to complete.  The branch reopened in January 2010 featuring: a larger conference/meeting room, a children's materials room with computers, over 20 computer stations, fresh paint, new furniture, new artwork,  new carpet, and without a circulation desk.  In its place, a set of three self-service checkout stations are located in nearly the same location as the old circulation desk and one additional self-service checkout station located in the children's materials area.  While other GPL branch locations offer a mixture of self-checkout and counter-checkout options, the Benjamin Branch is the first in the GPL system to move toward a fully patron self-checkout system.   Scheduled to open later this year, the McGirt-Horton Branch of the GPL will follow the Benjamin Branch's model in utilizing the fully patron self-checkout system.

Prior to closing for remodeling, the Benjamin Branch Library experienced an estimated 5,000 checkouts per week at the circulation desk[1].   According to Brigitte Blanton, assistant director of the GPL, budget cuts and subsequent staffing restraints, prompted the GPL to initiate the Benjamin Branch's fully self-service checkout system with the intent that staff could better serve the patrons by providing more hands-on service time[2].

## Purpose

The purpose of this study is two-fold.  First, this study's purpose is to examine the usage pattern of the self-checkout system by the Benjamin Branch Library's patrons to determine if it is being effectively utilized.  Second, this study is performed to determine if the self-checkout system is being positively received by the patrons at the Benjamin Branch Library.  The researcher hopes to answer the following questions:

- *How are patrons using the self-checkout system?*
- *How well is the self-checkout system working?*
- *Are patrons satisfied with the self-checkout system?*

- *How satisfied with the self-checkout system are patrons?*
- *How are patron's attitudes and assumptions affecting the use of the fully self-checkout system?*

The results of this study will be presented to the GPL to provide information on patron usage and patron satisfaction of the self-service checkout system implemented at the Benjamin Branch Library as well as to provide possible insight into predictable usage patterns at the McGirt-Horton Branch Library.

## Review of Literature

Computer systems and their programming are in a continual state of change.  As technology continues to expand and evolve, the needs of their user-based entities do so as well.  Self-service systems and programs are among one of the leading needs of businesses and organizations today. Self-service systems are everywhere in our daily activities:  bank ATM's, grocery and retail store checkouts, airline check-in, pay-at-the-pump gas. Libraries are now no exception.  Self-service in libraries allows patrons to check out and return materials without the assistance of a library staff member.  Studies performed on patron usage of self-service in libraries are limited, yet research offers a mixture of benefits and drawbacks to both the patron and the library.

*Self-Service History in Libraries*

In "Research on reader self-service in a public library" Haizhen Zhong stated that borrowing books from open stacks was the first type of reader self-service (101).  It wasn't until the late nineteenth century that books were offered to borrowers rather than being chained to shelves (Zhong 101). After the release of books for borrowing, the next step in patron self-service, according to Peter Brophy, was open access to the catalogues (8).  Technology for self-service systems, like self-checkout, has been around for over twenty years (Driscoll 85).  However, it was not until the early 1990's that companies starting producing self-checkout systems for libraries (Butters 34). These systems allowed users to "issue books with the use of an integrated computer link without any help from staff" (Morris 7).  Today's systems allow users to complete many functions that were previously done by librarians (Zhong 102).  Such functions that are prominent candidates for automation through self-service are the processes associated with issuing books to borrowers (Butters 34).  This is done through systematic desensitizing items issued, updating borrower records, and producing a receipt of the transaction (Chang 939).

*Benefits of Self-Service in Libraries:*
        *To Patrons*

New technology, new products, and new services come loaded with promise of many new or untapped benefits.  Library self-service checkout systems are regarded to offer benefits to not only the patron, but also to the library itself.  Self-service stands for independence of the user.   Improving and implementing technologies such as self-checkouts in libraries, allows patrons greater autonomy (Mathson 27).  Autonomy is valued by younger patrons as those who are capable of managing for themselves as a means of exercising their independence (Wolf 10).  Privacy of the user is another value capitalized on as a benefit to using self-service checkout systems.  Subject matter in which the patron is seeking and borrowing may present awkwardness at the circulation desk, but is afforded privacy at the self-checkout (Mathson 27). Time, as in saving time, is another benefit.  During peak hours in the library, there is often a line at the circulation desk for checkout.  The ability to use a self-checkout system provides faster service to the patron.   In her article on the success of the self-service checkout system at the Pierce County Library in Tacoma, Washington, Lynne Zeiher described a scenario of a 3-minute time elapse from the time a patron arrives at the library, retrieves a reserved book, performs self-checkout, and returns to the car (6).   Self-checkout provides improved service to the patron by supplying another option for users, increasing privacy, and reducing the amount of time spent waiting to be issued or return material (Gollin 44).

*Benefits of Self-Service in Libraries:*
        *To the Library and Staff*

Benefits to the patron reflect positively on the outlook of the library itself.  Therefore, the patron is not the only one who receives benefits from the library's self-checkout system.  Through the implementation of the self-checkout, the library gains the benefit of improved self-image, better time and staff management, and better customer service.

The library, keeping up-to-date and being modernized through the use of technology, gives "a good social image, thus making the library service more competitive and innovative" ( Zhong 103).  When patrons are able to self-checkout, the time not spent on performing the checkouts allows library staff to do other needed tasks (Gollin 42).  Often this "extra time" is spent on the patrons, an added benefit to the patron.  Frequently, when a patron approaches the circulation desk for assistance other than to checkout materials, they are forced to wait for the checkouts to be completed.  Shu-hsien Tseng and Pin-dar Kuo, in their study on patronage of the Ximen Intelligent Library of the Taipei Public Library System in China, are quoted saying about librarians: "instead of being stuck at the circulation desk, [librarians] can freely move around the

library to interact and share reading experience with patrons, giving them a better knowledge of library materials and a better understanding of patron needs" (413). Carol Sheffer, in her article "Self-Service at Your Library," asserts that "experts tell us that we should let machines do as much as possible and use people to perform actions that machines cannot" and continues with "there is no doubt that self-checkout options allow greater productivity for library staff" (7). Greater productivity can also result in the reduction of repetitive motion injuries of WRULD (work related upper limb disorder) among staff members (Morris 10). Self-checkout performed by patrons would significantly reduce the library staff members from experiencing this form of repetitive motion injury and increase productivity in other job performances.

*Drawbacks of Self-Service in Libraries*

While the benefits to self-service in libraries are noteworthy, there are also evident drawbacks. The primary drawbacks are the perceptions of the user and staff, the limitations of the systems, and the cost associated with the systems. These limitations hinder the success of self-service utilization. In Kouchung Chang and Chiao-Chen Chang's study on predicting user intentions related to self-issue and return systems, the findings concluded that user attitude toward self-issue and return systems play a "robust" role in determining user intention to use the self-service systems (946). The study also found that perceived usefulness and perceived ease of use affected the user's attitude toward using or intended use of the self-service systems (946).

Users are not the only ones with attitudes toward new technology. In her article "Self-Check: A Lesson in Mistaken Assumption," Pamela Soren Smith reflected on how her staff's attitudes toward fear of losing their jobs to a machine and lack of personal attention given to patrons was the "driving force behind the reluctance to embrace the self-check" that hindered its success (16). Yet, the positive attitudes of the staff at Farmington Public Library in Farmington, NM, reportedly made it easy to get patrons excited about using their self-service checkout system to a success rate of a hundred percent self-checkout (Wolf 8, 10). Chang and Chang's research clearly supports the indication that the staff's attitudes in both of the situations above had an impact on the patron's attitude toward using the self-checkout systems.

User's perceptions of ease of use of the self-checkout systems are often validated through the limitations of the systems themselves. The most common limitations of the self-service systems are compatibility and functionality. In November 2001, *The Electronic Library* published an article on self-issue and return systems that pinpointed these compatibility and functionality issues. Compatibility issues stem from the self-service systems not working with the library's existing or current software (Morris 12-13). These compatibility problems often result in keeping the self-service systems out of use and unavailable for use (Morris 13). Functionality issues include

ease of use, flexibility of scanning items, and dealing with magnetic material (Morris 12). Functionality issues have included inappropriate technology.  For example, most self-service systems in which patrons are familiar with in other venues swipe a magnetic stripe on the back of a card.  However, library self-checkout systems require placing their cards under a barcode scanner (Brophy 10).  Another functionality issue that has been corrected was the choice of colors used in displays.  Color-blind patrons had difficulty until such time as the colors were changed (Morris 13).  Self-service systems have been reported as a benefit to the hearing-impaired because many prompts are visual rather than verbal; however, they have not been functional for the visually-impaired who have difficulty reading the screen (Brophy 10).

Scanning certain materials has also proven to be a significant functionality drawback of the self-service checkout system.  In order for the self-checkout to work, library materials are read or scanned by barcodes or radio-frequency identification (RFID) tags located on or inside the library material.  Barcode reading has been a reoccurring problem reportedly due to placement on the item or the size of the barcode itself (Morris 13).  As part of the scanning issue, the way in which magnetic material is handled is another functionality drawback.  Certain checkout systems were too highly magnetized that there was potential to wipe out data on videos, DVDs, and CDs (Morris 14).

Purchasing, implementing, and/or integrating the self-service system is costly.  Each self-checkout station costs upwards of $16,000 (DeJoice 7).  As already discussed, barcodes may be a hindrance to the functionality of the system and need replacing.  Replacing barcodes on large collections will not only be costly in supplies, but also in the man-hours required to implement.  Maintenance is another cost associated with the self-service systems (Morris 11).   Sarah Gollin and Chris Pinder, in a study of the adoption of self-check technology in UK academic libraries, surveyed 75 libraries to ascertain why libraries invested in self-check, the role self-check plays in the library, and the effect it has had in the library.  Of the 75, 45 or 60% had invested in some form of self-check equipment (46).  Of the remaining 30 who had not invested in self-check, 75% cited the high cost of equipment as the issue (47).

*Literature Review Summation*

Study research on the actual utilization of self-service systems currently being implemented in library systems today is extremely limited. DeJoice and Sennyey point out that "a longer-term impact on self-checkout systems in circulation departments is missing in library literature, as is a methodical analysis of the experiences libraries have had after they invested in the technology" (5). As articles on "how we did it" appear in library literature, both positive and negative results on their experience with self-service checkout systems are discussed.

**Methodologies**

Observation was used to notate patron actions and operations during their use of the Benjamin Branch Library self-checkout system.  A survey was presented to patrons at the Benjamin Branch Library who used the self-checkout system to determine user satisfaction opinion of the self-checkout system as well as obtain patron background information.

*Observation*

The self-checkout system is operated by placing a library card with a barcode on the scanning machine under the scanner.  Once the card is recognized, the self-checkout prompts patrons to put one item on the scanner.  The visual and verbal prompts indicate when each transaction is complete.  If the patron does not have another item, there is a button to press that indicates the patron is finished.  The next screen prompts to print or not print a receipt.  Observation of the patron's self-checkout use was conducted at various operating hours of the Benjamin Branch Library between March 27 and April 1, 2010.  The Benjamin Branch Library is open from 9 a.m. to 9 p.m. Monday through Friday, from 9 a.m. to 6 p.m. on Saturday, and from 2 p.m. to 6 p.m. on Sunday.  Observations were made during weekday morning/early afternoon hours, weekday mid-afternoon/late evening hours, and weekend afternoon and evening hours. These varying observation times provided opportunities for differing samples of patrons. The first subject chosen for observation were the first patron to approach the self-checkout station in the library after the observer was set up and ready to observe.  The observer recorded the time the patron approached the self-checkout system, noticeable problems encountered by patron, noticeable incorrect use by the patron, staff involvement (if any), the time patron departed from the self-checkout system, and any alarms set off by patron upon exit on an observation log (Appendix 1).  After observation was completed, the next patron to approach the self-checkout was then observed.  A total of 120 patrons were observed in this manner.

*Survey*

A survey entitled "Benjamin Branch Library Self-Checkout Satisfaction Survey" was designed and distributed by the researcher to patrons of the Benjamin Branch Library who utilized the self-checkout system (Appendix 2).  The survey was structured with eight statements to be rated using a five-point scale (1=strongly agree, 2=agree, 3=not sure, 4=disagree, and 5 = strongly disagree). These eight statements reflected patrons' agreement levels regarding the ease of use of the self-checkout system, the helpfulness of staff, availability of staff, satisfaction with self-checkout system, beneficial use of the self-checkout system, and time savings through self-checkout usage. Background information such as gender, age, residency, and frequency of visits to the

library was also requested at the conclusion of the survey.  Whenever a patron completed the self-checkout process, the researcher would ask that he or she fill out a survey form for research purposes.  A comment section was provided to let patrons comment if they felt the need to.  Pertinent comments relevant to the study will be noted. A total of 102 surveys were completed by patrons.
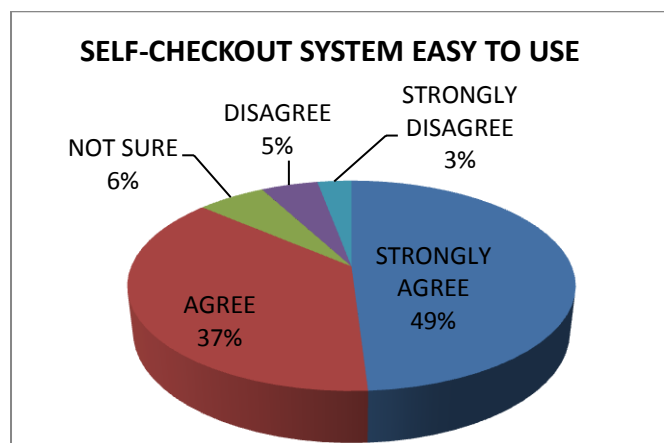
## Findings

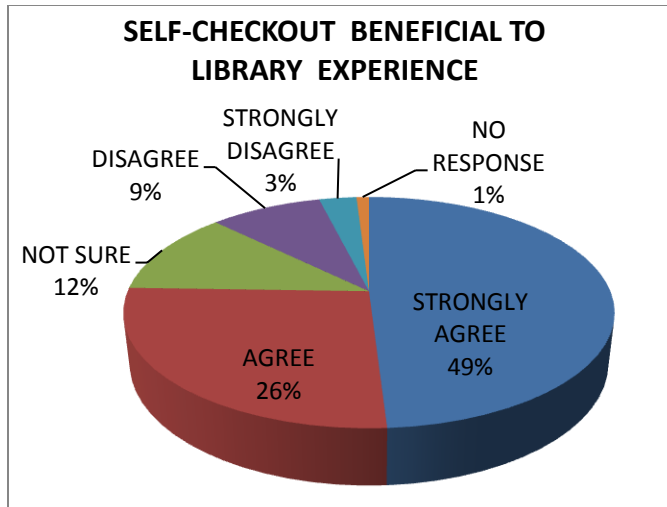*Personal Background Information*

Of the 102 subjects who filled out surveys, 30 or 29% were male and 71 or 70% were female, with one gender not reported.   The age of those surveyed ranged from 25 to 93, with the largest percent between 40 and 69 (59%). A total of 15 (15%) did not report age.  In terms of residency, 87 or 85% were Greensboro city residents, 9 were Guilford County residents, 2 were non-Guilford County residents, and 4 did not report residency.  In terms of frequency, 62 said they use the GPL less than 10 times in the last three months and 36 said they used the GPL ten times or more in the last three months.  Those same respondents reported 72 visiting the Benjamin Branch less than 10 times in the last three months and 28 visiting the Benjamin Branch ten times or more in the last three months.

*Survey Results*

The responses to each survey question were analyzed and results were formatted in graph form.
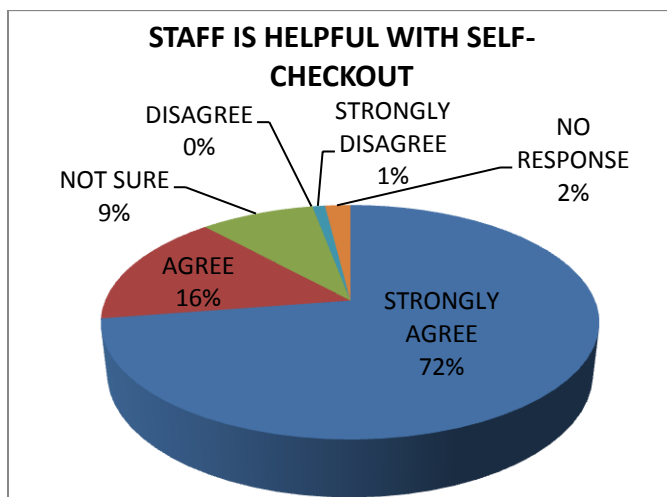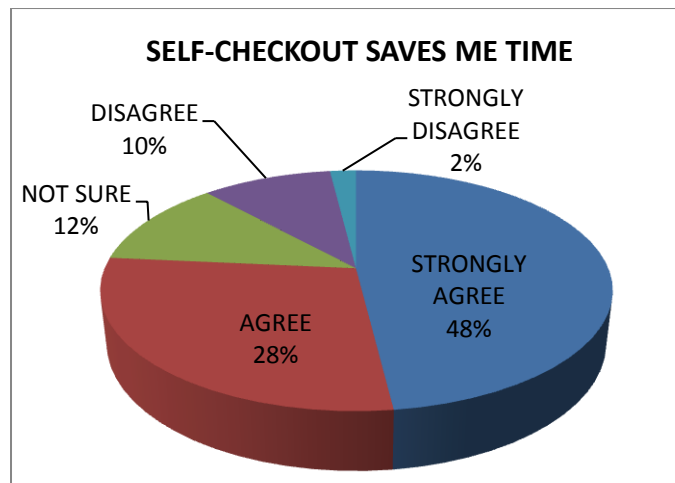
In terms of finding the self-checkout system easy to use, a total of 87% of the 102 patrons agreed or strongly agreed.  Only 8% disagreed or strongly disagreed. Those not sure if the self-checkout system was easy to use reported a total 6% of the patrons.

**SELF-CHECKOUT SYSTEM EASY TO USE**

STRONGLY DISAGREE 3%

DISAGREE 5%

NOT SURE 6%

STRONGLY AGREE 49%

AGREE 37%

**SELF-CHECKOUT  BENEFICIAL TO LIBRARY  EXPERIENCE**

STRONGLY DISAGREE 3%

DISAGREE 9%

NO RESPONSE 1%

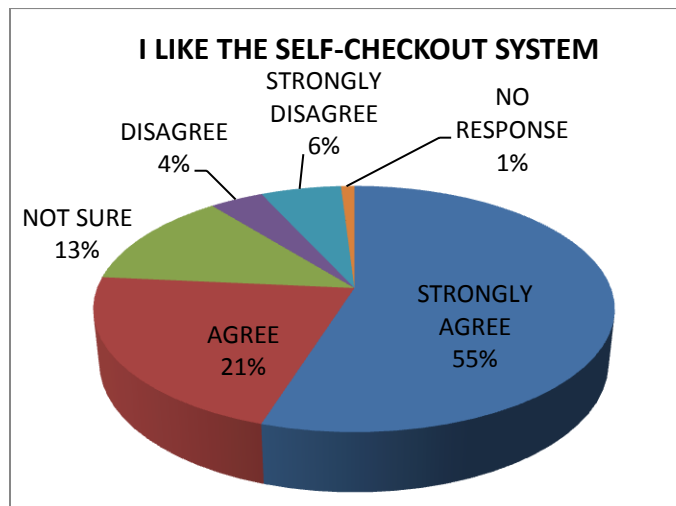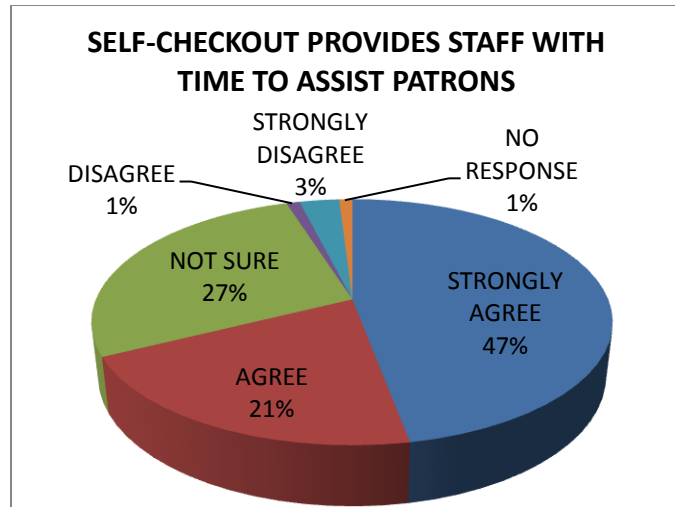NOT SURE 12%

STRONGLY AGREE 49%

AGREE 26%

In terms of finding the self-checkout system beneficial to their library experience, 75% of the patrons agreed or strongly agreed.  A total of 11% responded in disagreement. One had no response and 12 were unsure.

Finding the self-checkout system saved patrons time, 76% of the patrons agreed or strongly agreed.  A total of 12% responded in disagreement. Another 12% were unsure.

**SELF-CHECKOUT SAVES ME TIME**

DISAGREE 10%

STRONGLY DISAGREE 2%

NOT SURE 12%

STRONGLY AGREE 48%

AGREE 28%

**STAFF IS HELPFUL WITH SELF-CHECKOUT**

DISAGREE 0%

STRONGLY DISAGREE 1%

NO RESPONSE 2%

NOT SURE 9%
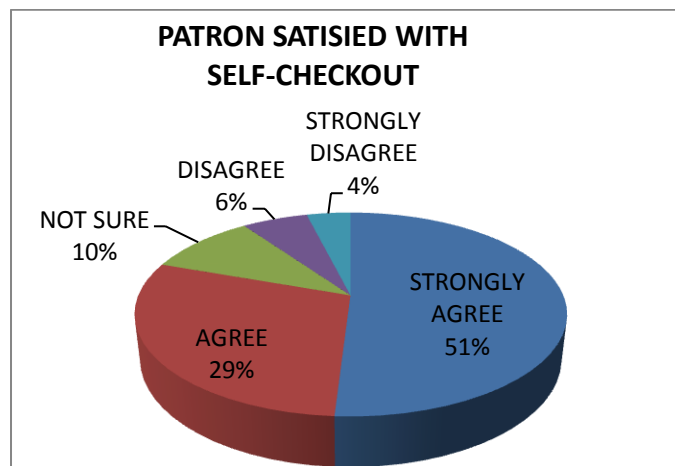
AGREE 16%

STRONGLY AGREE 72%

When asked if patrons found staff to be helpful with the self-checkout system, 88% of the patrons agreed or strongly agreed.  This question resulted in the largest percentage of those who strongly agreed. Only 1% disagreed to finding staff helpful with the self-checkout.
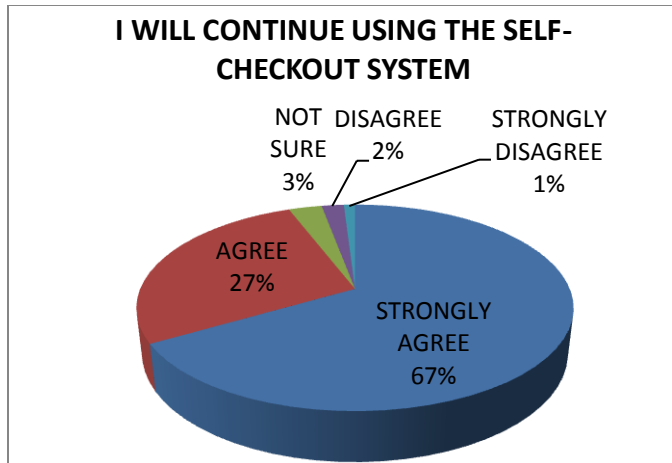
In terms of patrons finding staff to have more time to assist them because staff was not performing checkouts, 68% of the patrons agreed or strongly agreed.  Only 4% disagreed. However, a total of 27% were unsure.  This was the largest percentage of respondents not sure in the overall survey.

**SELF-CHECKOUT PROVIDES STAFF WITH TIME TO ASSIST PATRONS**

STRONGLY DISAGREE 3%
DISAGREE 1%
NO RESPONSE 1%
NOT SURE 27%
STRONGLY AGREE 47%
AGREE 21%

**I LIKE THE SELF-CHECKOUT SYSTEM**

STRONGLY DISAGREE 6%
DISAGREE 4%
NO RESPONSE 1%
NOT SURE 13%
STRONGLY AGREE 55%
AGREE 21%

When asked if patrons like the self-checkout system, 76% of the patrons agreed or strongly agreed.  A total of 10% disagreed. This was the largest number of respondents who strongly disagreed within the survey. A total of 13% were unsure. Not responding was 1%.

Likewise, in terms of patrons being satisfied with the self-checkout system, 80% of the patrons agreed or strongly agreed.  A total of 10% disagreed. Equally, a total of 10% were not sure.

**PATRON SATISIED WITH SELF-CHECKOUT**

STRONGLY DISAGREE 4%
DISAGREE 6%
NOT SURE 10%
STRONGLY AGREE 51%
AGREE 29%

**I WILL CONTINUE USING THE SELF-CHECKOUT SYSTEM**

NOT SURE 3%  DISAGREE 2%  STRONGLY DISAGREE 1%

AGREE 27%

STRONGLY AGREE 67%

In terms of patrons continuing to use the self-checkout system, 94% of the patrons agreed or strongly agreed.  This question resulted in the highest number of total patrons who agreed (agreed or strongly agreed).  A total of 3% disagreed. Equally, a total of 3% were not sure.

*Observation Results*

   *Time*

   The average time it took the 120 patrons observed to self-checkout was 1-2 minutes. Remarkably, eight patrons were observed who were able to self-checkout in less than one minute. The majority, forty-seven or 39%, were able to self-checkout in one minute, followed by 39 or 32.5% who were able to do so in two minutes.  Sixteen or 13% were able to self-checkout in three minutes.  Only 10 patrons took longer than three minutes, with the longest self-checkout lasting eight minutes.

   *Involvement*

   The researcher noted who was involved in the self-checkout process.  Of the 120 observations, 68 patrons were able to self-checkout without any assistance.  Staff members were involved in 50 observations including 3 occurrences when patrons had involved other patrons.  Two observations involved only other patrons assisting the patron at the self-checkout.

   When staff was involved, staff members directed by bringing patrons to the self-checkout seven out of the 50 observations, or 14% of the time.  Patrons sought staff another 7 times or 14% of the time.  During the occurrences where staff directed patron self-checkout, six were observed that staff walked the patron through the complete process.  Only one resulted in returning to the office for an unknown reason.  During the seven instances when patrons sought staff,  observations noted one occurrence resulted in staff taking patron to the office,  two occurrences resulted in the staff leaving before patron had completed self-checkout, and two occurrences resulted in the staff staying with patron through self-checkout process.  One occurrence resulted in staff not coming out of the office to assist patron with lockbox and patron returned again to office

for further assistance.  The last occurrence noted in which a patron sought staff assistance, the staff member did not assist with self-checkout in anyway, but checked patron out through the office.

On the remaining 36 observations of patron self-checkouts where staff intervened during patron self-checkout, staff intervention included six times as staff member was passing by, seven times to resolve an issue, six times to help with the DVD lock box, and once with a verbal response.  On six occasions, staff led patrons to the office.  On five occasions, staff remained with patron until completion of self-checkout, but on six occasions staff members left or disengaged patrons during self-checkout after initial problem solving.

*Usage Behaviors*

Of the 120 observed, 52 or 43% experienced problems using the self-checkout system.  Sixty-eight or 57% had no problem using the self-checkout, but eight or 12% of those did experience problems using the lockbox.   A total of 27 observations were made involving DVD checkouts.  Thirteen or 48% had problems using the lockbox.  Six or 22% were observed leaving the library without unlocking or attempting to unlock the DVD box.  Only 8 or 30% were observed to have no problems using the lockbox to unlock DVDs.

Of the 52 observations where patrons had problems at the self-checkout, the most noted problem was patrons held their cards too close to the scanner (11 out of 52 or 21%).  Patrons who appeared to not know what to do upon approaching the self-checkout were also noted as a significant reason for problems (8 out of 52 or 15%).  Other discerned problems were starting the checkout process with placing an item not library card under scanner (4 or 8%), moving items before they were processed (4 or 8%), scanning the wrong barcode or barcode reading problems (6 or 12%), and having items too close to the scanner (3 or 6%).  There were seven unknown problems (13.5%) in which the researcher was unable to detect the actual problem the patron was experiencing.  Of these, two patrons were able to self-checkout on their own, three went to the office, one was assisted by staff, and one who thought checkout was successful attempted to leave and activated the security sensor.

The security sensor at the door was activated 16 out of the 120 observations, at a rate of 13%.  Of these 16 cases, it was observed that 8 (50%) of the patrons did not lay their items down on the self-checkout scanner pad.  Unfortunately, it was unknown in six of the cases due to the researcher's inability to observe all the actions of some of the patrons.  However, only one of sixteen observations did the patron display no difficulty at the self-checkout, laid items down, and still activated the security sensor. It

should also be noted that 11 patrons were observed to not lay items down and did not activate the security sensor.

*Survey Comments*

A total of 39 comments were made.  It was noted that eleven of the comments were favorable toward staff, the branch, new look and new system.  Six comments were for liking the self-checkout system at the Kathleen Clay Edwards Branch Library better. Four commented on missing interaction with staff.  Only two were direct dislike comments of the new system.  Noteworthy comments included:  no signage for lockbox or need to unlock DVD boxes, no direction provided to indicate where or how to pay fines, and talking system/noise from system is distracting.

## Conclusion

*Patron Satisfaction*

Survey Research concludes patrons are satisfied with the self-checkout system. Seventy-eight of the 102 or 77% surveyed agreed (or strongly agreed) that they like the new self-checkout, and 82 of the 102 or 80% agreed (or strongly agreed) to being satisfied with the self-checkout system. Only 10% (10 of the 102) disagreed or strongly disagreed to liking or being satisfied with the self-checkout system. Patron attitude and perception does not appear to influence patron usage of the self-checkout system.

*Patron Usage*

Survey results showed only 8 of the 102 or 8% patrons who responded to the survey reported to disagree or strongly disagree with the self-checkout system being easy to use.  Observational findings showed 60 of the 120 patrons or 50% did not experience problems during their self-checkout.  However, of the 120 observed patron self-checkouts, 33 checkouts or 27.5% resulted in going to the office for various means of assistance. Overall patron efficiency of utilizing the self-checkout system successfully (no assistance from staff and no problems observed) was 68% (46 out of 68 patrons).

The following were noted incorrect usage behaviors were repeated by patrons:

The DVD lockbox was the largest issue.  There are no signs at the self-checkout station or verbal prompts given from the self-checkout process that informs patrons that DVD or CD material boxes need to be unlocked.  Second, the visual directions given by the lockbox itself are inaccurate.  If patrons do not know or staff members do not direct patrons to the lockbox, patrons have no way of knowing this is needed until the patron is at home ready to view the material.

Patron usage errors were the next largest issue.  Patrons do not appear to read the screen directions on the self-checkout.  However, many patrons were able to figure out the system on their own or with the assistance of library staff.  The most common error was patrons holding their library cards too close to the scanner.  Second most common problem was patrons do not know what to do upon approaching self-checkout.  Eight patrons approached the self-checkout with behaviors of looking for staff or reading the screen before beginning.  Patrons who stuck other items under the scanner first also may not have known what to do.  However, in all eight situations where patrons did not appear to know what to do, staff intervened.  Half of the situations where patrons stuck items under the scanner first resulted in staff assistance and the other half were able to proceed with self-checkout without further problems.

*Limitations of Study*

*Limitations on Results*

The majority of the patrons at the Benjamin Branch appear to be middle-aged to retirees.  This result may be based on the observation of only the self-checkout systems located near the door.  There is a self-checkout system located in the children's room that was not observed during this study.  Younger adult patrons may have checked out through the unobserved station.  Another indicator for a  low percent of younger adult patrons may have been the time of the study.  Guilford County School System was on Spring Break.  Good Friday and Easter, a major religious holiday season, was also observed just after the completion of data collection.  These two instances may have resulted in a change of patron traffic inside the Benjamin Branch Library.

The researcher was unable to distinguish certain types of behaviors and problems at the self-checkout due to patron privacy.  When the system responded "Please read the screen", the researcher was unable to read the screen from the observation post to notate the problem.  Other behaviors, such as if the patron laid the items down, were sometimes undetectable due to other patrons or staff hindering full view with the patron being observed. This limitation resulted in a significant 13% rating of unknown problems encountered by patrons with the self-checkout system.

*Limitations on Study*

After the completion of this study, the researcher identified that the observation log was inadequate for all the data that was collected.  After beginning observation, the researcher realized data was being written with each occurrence instead of quick check-off boxes for certain behaviors (i.e. patron laid items down or set off alarm).  Behaviors listed on the observation log were not beneficial or accurately observable (i.e. frustration, confidence).  A more thorough observation log would have saved time and observations may have been performed more efficiently.  This also slowed the analysis

of data because behaviors observed were not easily identified on the onset of the analysis process.

One of the survey questions was worded incorrectly for determining user satisfaction. The statement was: "I will continue using the self-checkout system at the Benjamin Branch Library."  Because patrons have no choice but to continue using the self-checkout system at the Benjamin Branch Library, a more appropriate question to determine user satisfaction might have been to ask "If given a choice between autonomous self-checkout and non-autonomous checkout, I intend to continue to use the self-checkout system at the Benjamin Branch Library."

Age was not reported by 15% of the patrons surveyed.  The option to check an age range rather than provide an actual year of age on the survey may have been less individually specific in which more patrons may have offered the information.

*Recommendations*

Based on literature and observations, the following suggestions would be made to the Greensboro Public Library about the self-checkout system at the Benjamin Branch Library:

1.  Signage in multiple locations informing patrons of the need to unlock locked materials.
2. Correct directions at the lockbox on how to operate the lockbox.
3. Staff to spend more time with patrons when intervening during the self-checkout process.  Staff may need to observe before and after resolving issues noticed to see if patron understands the full process before departing.  Almost half of the cases when staff was observed to leave patron during self-checkout, patron experienced further problems.
4. Staff involvement when security sensor is activated to provide positive feedback as well as include correct usage instruction (i.e. laying items down and/or waiting for prompt before moving items off scanner)
5. Staff available more often through circulating around library and checkout stations to assist, offer assistance, or to simply engage patrons either at self-checkout or within the library itself
6. Future studies:
   - staff attitudes and perceptions of the self-checkout system in order to determine staff understanding and support of the process and intent to ensure its success
   - staff time and task management in order to determine how efficiently overall intent of self-checkout expectations are being met

Notes

1. Unpublished information provided by the Greensboro Public Library of data accumulated pertaining to circulation, library visits, and library cards for each branch and total library system.
2. Information from a phone conversation with Brigitte Blanton upon asking to work with GPL on this action research project.

Works Cited

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Appendix 1.

Benjamin Branch Library Self-Check Observation Log

## **Benjamin Branch Library Self-Check Observation Log**

Observation #____

Time Patron approached self-check-out: _____

Behaviors observed:  (  ) looked for staff   (  ) hesitated   (  ) appeared to be reading directions before starting   (  ) proceeded to check out materials

Emotions/Attitudes observed:  (  ) hesitation   (   ) frustration   (  ) confusion   (  ) confidence

Staff involvement:  (  ) staff initiated   (  ) staff sought   (  ) staff directed   (  ) self directed

Other notes:


Time Patron left self-check-out: _____

Observation #____

Time Patron approached self-check-out: _____

Behaviors observed:  (  ) looked for staff   (  ) hesitated   (  ) appeared to be reading directions before starting   (  ) proceeded to check out materials

Emotions/Attitudes observed:  (  ) hesitation   (  ) frustration   (  ) confusion   (  ) confidence

Staff involvement:  (  ) staff initiated   (  ) staff sought   (  ) staff directed    (  ) self directed

Other notes:


Time Patron left self-check-out: _____

Appendix 2.

# Benjamin Branch Library Self-CheckOut Satisfaction Survey

*Please circle your answer to the questions using the following rating scale:*
*1 = strongly agree  2 = agree  3 = not sure  4 = disagree  5 = strongly disagree*

|  | SA | A | NS | D | SD |
|---|---|---|---|---|---|
| I find the self-checkout system easy to use at the Benjamin Branch Library. | 1 | 2 | 3 | 4 | 5 |
| I find the self-checkout system beneficial to my library experience at the Benjamin Branch. | 1 | 2 | 3 | 4 | 5 |
| I like the self-checkout system at the Benjamin Branch Library. | 1 | 2 | 3 | 4 | 5 |
| I will continue using the self-checkout system at the Benjamin Branch Library. | 1 | 2 | 3 | 4 | 5 |
| I find staff to be helpful with the self-checkout system at the Benjamin Branch Library. | 1 | 2 | 3 | 4 | 5 |
| I find the self-checkout system at the Benjamin Branch Library saves me time. | 1 | 2 | 3 | 4 | 5 |
| I find staff has more time to assist me because they are not checking out books to others. | 1 | 2 | 3 | 4 | 5 |
| I am satisfied with the self-checkout system at the Benjamin Branch Library. | 1 | 2 | 3 | 4 | 5 |

*Please share the following statistical data:*
Gender:  (  ) Male    (  ) Female                    Age:_____years
Residency:  (  ) Greensboro (  ) Guilford County  (  ) Non-Guilford County
Visits made to any Greensboro Public Library: ___# of times in last 3 months
Visits made to Benjamin Branch Library: ___ # of times in last 3 months

Comments:_____
_____
_____

*Thank you for your time in completing this questionnaire.*