

# Improving the 1040 process by applying lean principles: a case study

Improving the 1040 process by applying lean principles

Lisa M. Walters, Mark A. Nickerson and Linda A. Hall  
*School of Business,*

*The State University of New York-Fredonia, Fredonia, New York, USA*

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## Abstract

**Purpose** – The purpose of this paper is to investigate a subject accounting firm's existing workflow processes for preparing individual tax returns with an emphasis on identifying predominant areas of waste.

**Design/methodology/approach** – Specific Quality and Lean tools were applied to qualitative data secured from on-site visits to the firm. Quantitative data analysis of productivity measures was performed to identify additional sources of muda (waste) as well as validate the findings from the qualitative analysis. Corrective actions were recommended as applicable.

**Findings** – This case study of the subject firm identifies predominant wastes in the individual tax return process as defects and waiting. The authors propose that these categories of waste (waiting and defect) may indeed be the predominant forms of waste in service organizations and require further research.

**Research limitations/implications** – At least two limitations exist. The first was the inability to capture exact cycle times for each of the process steps. A second limitation was that the data on staff performance were gathered via interview rather than through direct observation.

**Practical implications** – Individual income tax return preparation (Form 1040) provides a significant revenue stream for many accounting firms. Managing the processes involved in an effective and timely fashion is critical to profitability. Additionally, other service industries, including financial and accounting firms of similar size or function, may find these areas of waste relevant and adopt similar strategies for eliminating or reducing them in service-processes.

**Originality/value** – Negligible literature exists concerning wastes in accounting firms. However, accounting firms in the USA earn an average of more than 50 percent of their total fees from tax services, including income tax return preparation.

**Keywords** Lean, Accounting, Continual improvement

**Paper type** Case study

## Introduction

Lean manufacturing, also known simply as Lean, is a systematic method of process improvement that emphasizes the elimination or minimization of waste that burdens production processes (Anvari *et al.*, 2011). Taiichi Ohno (1988) is well-known as the originator of lean production concepts, as the developer of the Toyota Production System in Japan, and the first to identify seven wastes (or muda) in production systems. Later, an additional waste category was added to this core seven, resulting in Eight Deadly Wastes (Sunder, 2013). Further work of Suárez-Barraza *et al.* (2016) provide insight into additional, more modern notions of muda, unique to that of the twenty-first century, specifically, inefficient meetings, technological distractions and reception of e-mails not necessary to the operation. These additional muda sources were gleaned from the study of small and medium enterprises, revealing that the historical lean categories are indeed dynamic and subject to additional growth. A recent study (Aka *et al.*, 2019) evaluates the sources of muda in terms of a critical construction input of sandcrete blocks and the production process to produce those blocks. This study reiterates yet another source of muda, known as “making do,” meaning that a process begins before all preconditions are ready. “Making do” muda is analogous with Ohno's (1988) overproduction muda, noted as the most predominant form of waste in manufacturing (Aka *et al.*, 2019).



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The term “Lean” is credited to John Krafcik (1988) in an article based on his master’s thesis at MIT, which inspired authors Womack *et al.* (1991) to write *The Machine that Changed the World*, which in turn spread the principles of Lean production around the globe. Lean is widely associated with manufacturing firms including not only Toyota, but other top manufacturers.

Recent research supports the application of Lean principles for service industries, leading to increased competitiveness and customer satisfaction (Swank, 2003; Kanakana, 2013; Liker and Ross, 2017). Researchers have conducted and published hundreds of case studies focusing on the application of Lean principles to service industries, providing insight and guidance for improving process efficiency and effectiveness in large service sectors such as health care, education, airlines, banking and finance and hospitality (Suárez-Barraza *et al.*, 2012).

While researchers often propose models or frameworks for subject producers to consider (e.g. Petterson, 2009), research including specific implementation strategies are deficient (Jasti and Kodali, 2015). Non-academic practitioners consult in service sectors such as accounting, indicating a growing interest in Lean management throughout an organization, and while lean principles can be applied to the accounting functions within organizations, very little has been done to study processes within public accounting firms, the providers of tax and assurance services for external clients (Brosnahan, 2008; Lean Accountants, 2019). Lean principles and tools can be applied and implemented in public accounting firms of all sizes to reduce muda, thus increasing productivity and profit at the firm level.

To place this study in context, consider that public accounting firms in the USA earn an average of more than 50 percent of their total fees from tax services, including income tax return preparation. Firms with under \$10m in revenue earn an average of 30 percent of net client fees from individual tax preparation and planning services (American Institute of CPA’s, 2018). This case study evaluates the 1040 (US Individual Income Tax Return) practice of a mid-regional accounting firm, which provides a range of services, such as outsourced accounting, auditing, tax, wealth management and Sarbanes–Oxley compliance. In our subject firm, a medium-sized regional office with 45 employees, approximately 56 percent of fees are derived from tax services, of which 44 percent are from 1040. This means that nearly 25 percent of its client fees come directly from maintaining a 1040 practice within the firm. As a result, it makes sound economic sense to improve this particular practice dimension, not only for this firm, but others as well, even beyond those in the USA, as the Lean principles applied are general in nature and may be applied to other countries where taxes are collected by the government.

To protect the subject firm’s market presence, its identity and geographic location will remain anonymous. It was this firm’s desire to improve its profitability with regard to its 1040 practice as soon as possible, with the next tax year as its target horizon. As a result, this study occurred outside of tax season. This firm was selected because it was believed its size would allow for improvements that might exist across the broad spectrum of accounting firms. Additionally, this firm expressed an interest in participating, desiring assistance with its processes before the next tax year. As a result, improvements would need to be easily implemented and within the firm’s sphere of influence.

The goal of this case study is to investigate our subject accounting firm’s existing workflow processes using both quantitative and qualitative data for preparing individual tax returns with an emphasis on identifying predominant areas of waste, as categorized in terms of the principles of Lean management. To construct the case study, we employ the critical aspects of case study research posed by Eisenhardt and Eisenhardt (1989, p. 533), in that we ultimately seek to further expand the body of knowledge concerning Lean management by applying it to a specific accounting firm by forming research questions,

designing methodology and the enfolding literature. Our hope is that the results may then be generalized to similar entities with similar processes.

We propose that by applying the Lean approach with regard to the identified waste categories, we can provide recommendations that the firm may implement quickly to improve the firm's existing workflow processes for the next tax year, thereby improving the profitability of the forms 1040 preparation and processing system. The desired result is maximization of the firm's profitability by minimizing identified wastes, recognizing that some wastes are unavoidable, such as those that might be dictated by regulatory statute. To test this proposal, two research questions were posed:

*RQ1.* With regard to the firm's 1040 process, do areas of waste exist, and do manageable causes to those areas exist?

*RQ2.* For identified causes resulting from *RQ1*, what recommendations might be considered that will allow the firm to readily implement actions to benefit its profitability in the next tax year?

In addressing *RQ1*, recall that the hallmark of Lean management is the identification of muda that burdens a process, followed by an evaluation of issues that contribute to or cause the muda. As noted, these wastes of Lean are sometimes referred to as the Eight Deadly Wastes (Sunder, 2013), expanded from the seven categories originally determined (Ohno, 1988; Sutherland and Bennett, 2007). This eighth category is described as "Neglect" (neglected employee creativity) (Hicks, 2007). These eight categories, identified in Table I, can be applied in the context of the 1040 process in any public accounting firm, and easily remembered by practitioners through the acronym DOWNTIME (Table I).

For the purposes of this case study, the additional twenty-first century notions of muda are not explicitly defined in Table I, as this table focuses directly on the 1040 management process as it exists in any accounting firm. Table I is not unique to our client firm.

### *The firm's 1040 process*

Lean looks at a process and seeks to reduce or eliminate wastes, regardless of the nature of the process. The 1040 process is a series of tasks organized to convert information from a client to a completed individual income tax return. The process steps are somewhat consistent among firms, but may vary significantly based on several factors, most notably, the level of technology utilized. This section summarizes the 1040 process at our subject firm.

Generally, the 1040 process begins with the accounting firm providing individual tax clients with a client organizer. The organizer is a pro forma printout that allows firms to gather information from clients in an efficient and systematic manner. A typical organizer

Category	Application to the 1040 process in a public accounting firm
Defect	Data entry errors, missing data, human error, flaws in automated reports or systems
Overproduction	Subjecting work to more levels of review than necessary, manual processes that could be automated
Waiting	Waiting for the client to submit source documents, waiting for preparer or partner availability
Neglect	Ignoring employee suggestions for process improvement
Transportation	Poor workplace layout, unnecessary file movement
Inventory	Work-in-process: incomplete jobs that cannot be billed until completed
Motion	Misplaced files, client information housed in multiple files or offices
Extra processing	Second and third reviews of work

**Table I.**  
Wastes applicable to  
the 1040 process

contains a list of all information included in the prior year's tax return as well as prior year dollar amounts, helping clients gather all necessary tax data for the current year. Organizers are printed and mailed to clients early in January as a reminder that all information must be provided to prepare the tax return. Clients may choose to mail, drop off, or provide documentation electronically.

Once the primary client information has been received by the accounting firm, the internal preparation process commences. College interns scan taxpayer information, source documents and completed organizers to create an electronic client file, eliminating paper while maintaining client files for record retention purposes. A tax preparer in the office enters data from the client files directly into tax software. If information is missing or questions arise, the client is contacted. Once preparation is complete, the preparer transfers the file either by paper folder or electronically via workflow software to the assigned reviewer. The reviewer verifies data entry and the resulting finished tax return output. If additional information or documentation is necessary, the preparer and/or client will be contacted.

If substantial amounts of client information are missing, or if many errors are discovered by the reviewer, the file is returned to the initial preparer. If the initial preparer is not available, the return waits. Once corrections are made and the file is re-reviewed, the return moves forward to processing.

A processor, typically an administrative assistant, processes completed returns to be signed by a partner and delivered to the client for signatures prior to electronic filing. Processing includes printing, addressing and binding the returns along with any additional deliverables such as payment or estimated tax vouchers. The processor passes the final package along to the partner for final review and delivery instructions. If any errors or oversights are discovered by the partner, the entire return may be sent back to the start of the process, depending on the nature of the error.

This workflow is summarized using a supplier-input-process-output-customer figure, as Table II.

### Methodology

This case study used a mixed methodology, using both qualitative and quantitative data to address the research questions. The qualitative data were derived from reviews of extant policies and procedures, extant survey results and interviews conducted using an instrument constructed for the research study.

The quantitative data were provided by the accounting firm in the form of Excel spreadsheets as extracted by the firm's project management software. These data existed within the system, and the current system was simply being used by the firm for billing purposes. For purposes of this research, specific criteria were provided to the firm with regard to the Excel data pull so that an analysis of workflow could be performed. Those criteria are described below.

Where applicable, workflow and value stream mapping was conducted to facilitate problem-solving methods (Dinis-Carvalho *et al.*, 2018). The methodology is described with regard to each research question below:

*RQ1.* With regard to the 1040 process, do areas of deadly waste exist, and do manageable causes to those areas exist?

This research question was evaluated through various modalities. To begin, six 1040 process standard operating procedures were provided by the firm and evaluated by the researchers to determine if the management of the 1040 process was well-documented, allowing for robust implementation at all process steps. These standard operating procedures were in good order.

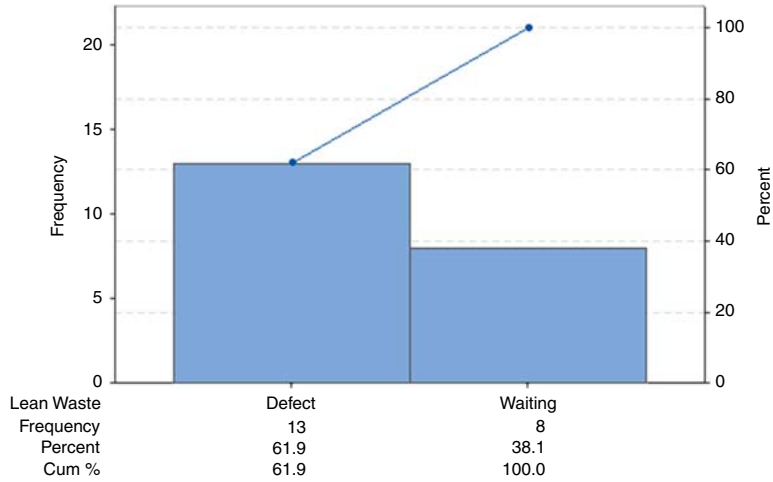
S Suppliers	I Inputs	P Process	O Outputs	C Customers
Clients	Hard copy tax data Electronically submitted tax data via source portal Electronically submitted tax data via e-mail	Start: client submits tax data to firm	Complete and accurate tax data	Interns
Interns	Complete and accurate tax data	High-level process description Scan/enter data into project management system as appropriate (if submitted via portal, this step is not necessary)	Digitized data entered into the project management system	Preparers
Preparers	Digitized data entered into the project management system Extracted tax data migrated to IRS Form 1040	Extract tax data using autoflow technology Complete IRS Form 1040 and cover letter to clients	Extracted tax data migrated to IRS Form 1040 Completed IRS Form 1040	Reviewers
Reviewers	Completed IRS Form 1040	Reviews IRS Form 1040 completeness and accuracy; does NOT review cover letter	Reviewed IRS Form 1040	Processors
Processors	Reviewed IRS Form 1040	Prepares electronic file as PDF or printed file for managing partner review, creates routing sheet, and ensures correct cover letter is with correct return	Printed or PDF of IRS Form 1040, cover letter, and routing sheet	Managing partners
Managing partners	Printed or PDF of IRS Form 1040, cover letter and routing sheet	Review and sign IRS Form 1040. Reviews cover letter; completes routing sheet	Signed IRS Form 1040; reviewed cover letter; completed router	Processors
Processors	Signed IRS Form 1040; reviewed cover letter; completed router	Releases IRS Form 1040 and cover letter to client  End Client receives tax return documents	Final IRS Form 1040 cover letter	Clients

**Table II.**  
1040 process workflow of subject client

The firm also has a self-evaluation process in place in the form of an in-house anonymous survey, the results of which were shared at the start of our study. This extant survey was issued by management in preparation for the upcoming 2018 tax season; it was completed by staff members following tax year 2017. The managing partners asked what issues concerned the staff with respect to tax year 2017; the textual input from the staff members was then tallied by the researchers. Notations of concern were tabulated and mapped to areas of Lean waste. A Pareto Analysis (Figure 1) was performed to identify the largest waste category contributor. These in-house survey results were later compared to the results from the on-site interviews with staff members, which took place about one month after this initial data were provided. The summation and categorization of these issues in terms of Lean wastes are found in the Results section.

Face-to-face on-site interviews were held with staff members over the course of one full working day (during late summer, not during tax season). Interviews were scheduled with each task group, such as scanners (two staff interns), processors (two staff members), preparers (seven staff members) and reviewers (four staff members, including a managing partner) for a period of approximately 45–60 min for each group. In each case, the interviewed group was asked the questions (as derived from Hanna, 2018) found in Table III.

**Figure 1.**  
Contribution of lean wastes in issues noted by staff for tax year 2017



**Table III.**  
Interview questions for staff members to characterize process

Questions	Type of data to collect	Notes
1. In your own words, describe the major steps of processing the returns	High-level flowchart	
2. What step of the flow is your area of work?	Process point identification	
3. How long does it take you to complete this step if you have no distractions or interruptions? (Average)	Minutes/hours	
4. Are you interrupted and are these interruptions/distractions similar in nature?	Yes/no description	
5. How do you know what your work is ready to start? What system is in place to trigger work?	Text information	
6. Is the work bundled before moving to the next step?	Yes/no	
7. What barriers make this process step painful to you?	Text	
8. What potential opportunities do you see to improve your work process point?	Text	

The goals of these on-site interviews with respect to *RQI* were to:

- (1) Validate that the standard operating procedures provided by management are executed consistently by staff members.
- (2) Understand:
  - the task flow within each process step;
  - the perceived length of time it takes to complete a process step; and
  - the top factors that impact staffs' ability to complete assigned processes efficiently, along with possible solutions.
- (3) Identify areas of Lean wastes as inferred by staff.
- (4) Provide substantiation for the issues identified in the in-house extant survey (Table IV).

Next, Excel data on 1040 billed hours, work-in-process (WIP), percent realization, overseeing partner and dates for each process step, including delivery, were directly extracted by the client organization from its project management software. The data were evaluated using

control charts, *t*-tests, and analysis of variance (ANOVA) to gain deeper insight into the 1040 management process.

After gathering the aforementioned qualitative and quantitative data, a cause analysis was conducted with regard to the identified predominant waste categories. This analysis was facilitated by the researchers using the fishbone (Ishikawa) analysis technique, discussion, and the 5-why's technique with a staff member from each process area (a separate face-to-face meeting lasting approximately 1 h). Because some identified causes were outside the firm's sphere of influence, causes are not necessarily determined to be root causes:

*RQ2.* For identified causes resulting from *RQ1*, what recommendations might be considered that will allow the firm to readily implement actions to benefit its profitability with the next tax year?

This research question was addressed through two primary means with the recommendations targeted to the root causes of the predominant wastes. Attention was focused on issues identified by staff members during the interview process, using the tool presented in Table III. Specifically, the researchers evaluated the staff suggestions for improvement in terms of their impact on the root causes.

Next, recommendations were gathered from a group of quality and accounting practitioners. This focus group consisted of two members of a local section of the American Society for Quality (ASQ) who specialize in service quality, one practicing accountant from a firm of similar size to the research client firm, and four of the research client's managing partners.

## Results

The results of the study confirmed that sources of deadly waste did exist within the 1040 management process in our subject firm. Further, manageable causes could be determined, allowing for recommendations within the firm's sphere of influence to be posed. Each research question will be considered below, along with the results for each:

*RQ1.* With regard to the 1040 process, do areas of deadly waste exist and do manageable causes to those areas exist?

The six IRS Form 1040 process standard operating procedures provided by the firm were evaluated by the researchers and mapped to the known general process of IRS Form 1040 management (refer to the 1040 PROCESS above). It appeared that all process steps were addressed; additionally, all staff were trained on the procedures.

### *The in-house survey*

The managing partners provided the results of the in-house survey to the researchers. The results were tabulated and mapped to the corresponding Lean waste category. The summation of survey results is found in Table IV.

A review of Table IV established Defect and Waiting as the most frequently noted Lean wastes. A Pareto analysis of these wastes is shown in Figure 1.

Issue	Frequency	Lean waste
Cover letter inaccuracies	12	Defect
Sharefile® Problems (incomplete information or return not retrieved by tax client)	3	Waiting
Workflow assignments	2	Waiting
Quality of scans	1	Defect
Scheduling of work	3	Waiting

**Table IV.**  
Issues noted by  
staff: 1040 process  
tax year 2017



Figure 1 demonstrates that 61.9 percent of staff noted issues involving defects. Evaluating that percentage in terms of Table IV reveals that 93.3 percent of defect is attributable to inaccuracies in the cover letter written to convey the finished product to the customer. The remaining source of defect is attributable to the integrity of the scans of material submitted by the firm's clients for tax preparation. It is important to note that defect waste contributes to waiting waste, as staff must wait to start the process again at various points once a defect is corrected.

Waiting waste appears to be connected to Sharefile® (an online file sharing platform) (37.5 percent of waiting issues), scheduling of workload (37.5 percent of waiting issues) and workflow assignments (25 percent of waiting issues). With regard to Sharefile®, at times the data submitted by the client are incomplete, and a wait ensues while the firm contacts the client for complete information. At other times, the use of Sharefile® to deliver returns is a source of waiting, as some clients indicated they would like to receive their returns via Sharefile® but were unaware they requested it. As a result, the firm found itself waiting for clients to retrieve their returns, when in fact the client did not realize the return was available to them.

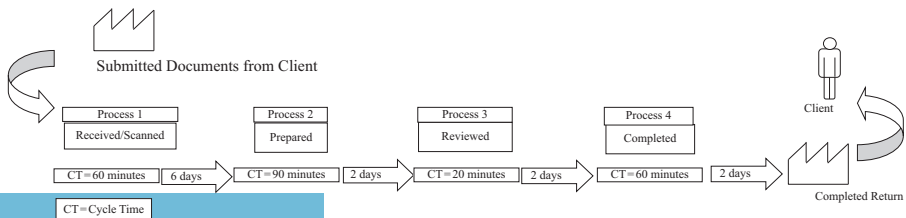
Waiting also occurs as partners are assigned to review their own clients. If the partners are not available, the file will not be reviewed until that partner is free. As a result, the assignment of work to that particular partner results in the wait. The scheduling of work also contributed to the waiting waste, as files were assigned to staff members who were not in the office long enough to complete the return due to conflicting job responsibilities, such as auditing. Additionally, it was unclear at what stage of completion unfinished returns were left. Staff member interviews provided substantiation for these results and facilitated discussion.

*The on-site interviews conducted by researchers*

All staff members provided consistent information regarding the major process steps of the 1040 management process; these major steps concurred with the standard operating procedures provided to the researchers earlier. Staff members from each group confirmed where their process step occurred within the 1040 management activities. This specification allowed for the scope of the remaining questions to be consistent among the staff members in the group being interviewed.

Staff members also provided their perceived elapsed time to complete their particular activity. Although it is understood that perception may not accurately reflect reality, these values were accepted by the researchers as there were at least two members within each group who concurred on the values; additionally, these approximations are not necessarily critical in determining and addressing areas of waste. Without the ability to actually observe the process during tax season, such approximations were determined credible, as the times do appear similar to the standard of practice for the 1040 management process.

The average length of time on task (cycle time) and approximately how long the 1040 return waits before moving to the next step were plotted on an abbreviated value stream map as Figure 2. Lag times between process steps were calculated from Excel data provided by the client from its workflow system and did not result from the staff member interviews.



**Figure 2.** Value stream times of key processes from staff perception and available data



The idle time between the Received/Scanned and Prepared steps (average six days) is identified as the longest wait time. This identified bottleneck area is logical, when evaluating the input from staff members indicating the top factors that hinder their ability to complete assigned processes efficiently, as a key barrier to efficient tax preparation is the staff members' requirements to construct a cover letter to accompany the return. For example, seven of the seven preparers interviewed indicated that such construction adds time to this particular task, creating a backlog of returns awaiting preparation.

Other issues identified through the interview process include workflow problems existing when other staff members were out of the office; additionally, waiting for partners to review files also proved problematic. Waiting for all documentation from the clients to begin the tax preparation process is an ongoing problem noted in the very first step of the 1040 management process. Finally, errors that occur within the tax preparation process cause defect waste and contribute to wait time. A summation of staff interviews with regard to barriers is contained in Table V.

The mapping of the barriers from staff member interviews to Lean waste categories was performed by the researchers. When evaluating these waste categories against those initially determined from the in-house survey summation of Table IV, the findings are consistent. Two main areas of waste predominate: waiting and defects.

#### *The excel data*

Excel data on 1040 billed hours, WIP, percent realization, overseeing partner and dates for each process step, including delivery, were directly extracted by the client organization and provided to the researchers from its project management software. The data were evaluated using control charts, *t*-tests, and ANOVA to gain other insights into the 1040 management process.

The first area of analysis undertaken was to understand the relationship between WIP and percent realization, where percent realization is equal to: amount billed/WIP × billable rate.

Staff group	Process point description	Barriers	Lean waste category
Interns	Scan/enter data into project management system as appropriate (if portal submitted, this step is not necessary)	Not all documentation available	Waiting
Preparers	Extract tax data using autoflow technology Complete IRS form 1040 and cover letter to clients	Cover letter preparation	Defect/waiting (time to construct takes time)
Reviewers	Reviews IRS Form 1040 completeness and accuracy; does NOT review cover letter	Not all documentation available/ Backlog of files to review when out of office	Waiting
Processers	Prepares electronic file as PDF or printed file for managing partner review, creates routing sheet and ensures cover letter is with correct return	Waits when reviewers of office, then receives a batch all at once	Waiting
Managing partners	Review and sign IRS Form 1040. Reviews cover letter; completes routing sheet	Cover letter defects	Defects
Processers	Releases IRS Form 1040 and cover letter to client	Waits when partners out of office, then receives a batch all at once/client fails to retrieve return via Sharepoint	Waiting

**Table V.**  
Summation of barriers and Lean waste categorization resulting from staff member Interviews

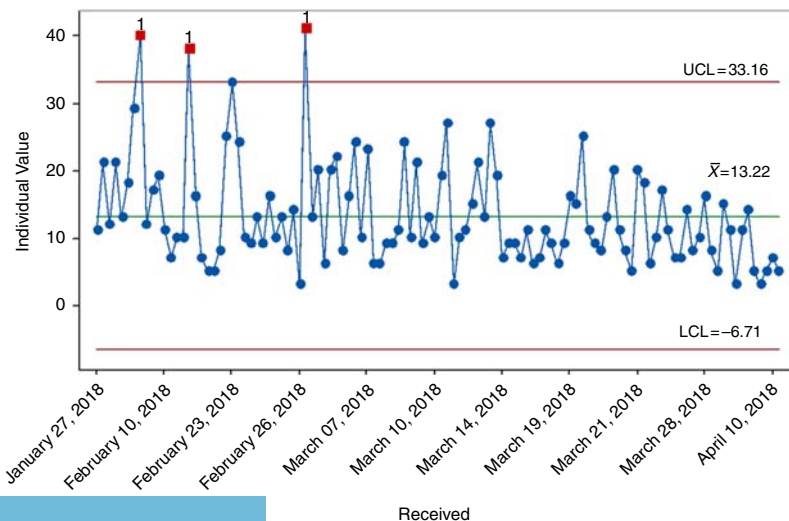
As expected, these measures were negatively correlated, with a Pearson correlation =  $-0.185$  and a  $p = 0.000$  at a 0.05 significance level.

Next, total conversion days were calculated from the data, representing the days elapsed from receipt of materials from the client to the date delivered. That value was correlated to WIP, resulting in a positive correlation, with a Pearson value =  $0.349$  and a corresponding  $p = 0.004$  at a 0.05 significance level. Thus, the more conversion days, the higher the WIP, and thus, the lower the percent realization. This result directly speaks to bottom-line profitability: by reducing conversion days, including idle time, the firm can increase profitability.

Total conversion days over time were evaluated using an individual control chart (I chart) to get a sense of data movement, as illustrated in Figure 3. Instability can be identified in the earlier time frame (late January – early March) as evidenced by the outlying points denoted with the Code 1 (which indicates points beyond control limits). However, the important takeaway from Figure 3 is that the process appears to gain stability sometime in mid-March. This time period corresponds to the pass-through tax return date (forms 1065 for partnerships and LLCs, and 1120S for S Corporations), indicating that the pass-through process may somehow impact the 1040 management process.

To better illustrate the change, the data were staged. Per Figure 4, it is evident that instability exists in both time frames (before and after March 15), however, the image illustrates that the pass-through process appears to have an impact on the 1040 process. Please note the outliers were “brushed” using Minitab, and therefore, were not used in any of the derived values, such as the  $\bar{x}$ -bar or control limits provided. An ANOVA was conducted to ensure that the differences were more than just perceived. The outliers were excluded from the ANOVA as normality is an important consideration for the performance of that analysis.

The ANOVA supported that a significant difference existed between the means for total conversion days for 1040 returns before and after the pass-through filing date, with the pre-pass-through filing date providing a mean of about 15 days, and the post-pass-through date providing a mean of about 11 days, with a  $p \leq 0.001$  at a 0.05 significance level.



**Figure 3.**  
I chart of total  
conversion days,  
1040 management



management process. In addition, the processes for both 1040 filings and pass-through filings contain areas for potential waste reduction.

*Cause analysis*

To evaluate the major areas of waste, defects and waiting, as determined through the in-house survey results (Figure 1) and staff member interviews (Table V), as well as the shift in efficiency in the 1040 management process as a function of the pass-through filing date, causes were considered using the fishbone diagramming technique, discussion, and the 5-why's technique. The specific issues within the waste categories were chosen as the problems on which to focus.

*Defects*

The first fishbone analysis addresses defects involving the cover letter. This issue was identified in both the in-house surveys and the face-to-face interviews. The analysis of this issue is illustrated as Figure 5.

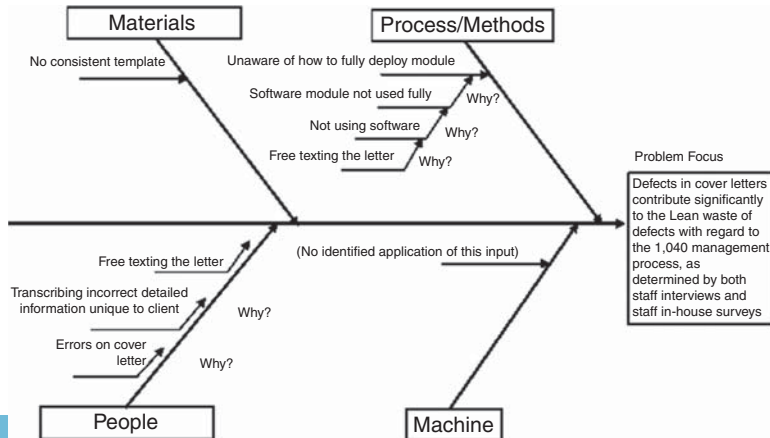
Figure 5 illustrates that the root cause of defects within the cover letters results from not fully using the available project management software to generate cover letters for each client. The software is capable of this type of letter generation. It should be noted that managing this defect will also alleviate waiting for tax returns early in the process (between the process steps of data receipt and preparation).

The second fishbone analysis addresses defects from errors occurring during the 1040 process. This issue was noted in the staff interviews and alluded to in the in-house survey, as "poor scans" contributing to later errors. The analysis is shown as Figure 6.

The analysis associated with Figure 6 was enlightening in that it demonstrated not only areas of causation with regard to defect in returns, but also pointed to causation of waiting issues associated with the first step of the process, discussed below. In terms of defect, the level of action within the firm's sphere of influence is within the correct application of tax regulations and associated changes in tax software. These regulations change frequently, in many minor ways. As a result, the errors noted are minor in nature.

*Waiting*

The Lean waste of waiting appears to be of concern in the staff interviews and the in-house surveys. Three areas of waiting appear to be problematic: waiting for tax information to be



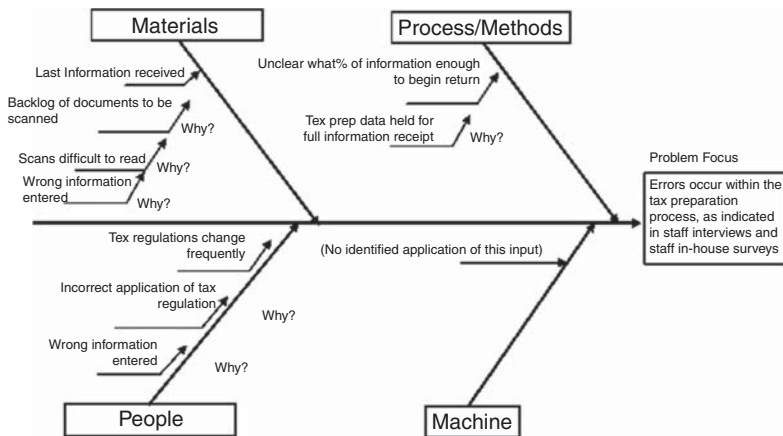
**Figure 5.**  
Fishbone analysis  
for defects within  
cover letter

received; idle times for WIP returns (workflow scheduling and workflow assignments); and waiting for the client to retrieve completed returns.

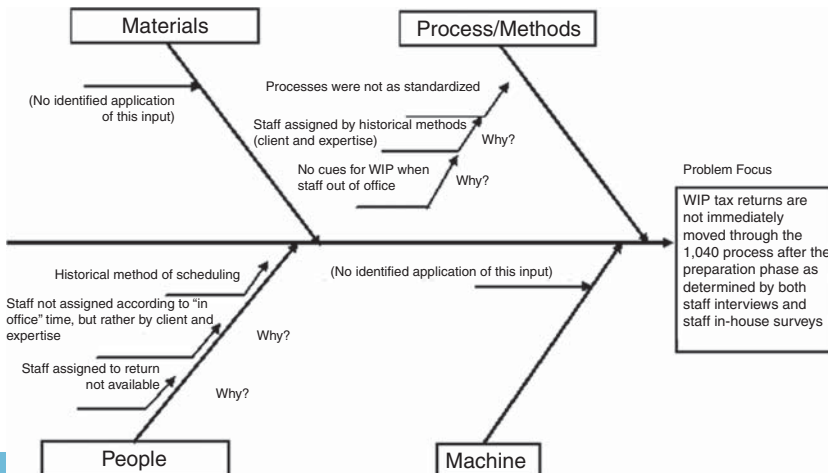
As noted earlier, the analysis of waiting with regard to incomplete tax information was conducted as a consequence of evaluating errors in tax preparation (Figure 6). That analysis found that some information is available from the client; however, complete documentation is not always submitted in a timely way. This incomplete information issue involves not only hard copy data that are scanned into the project management system, but also data provided to Sharefile®. Staff tend to hold partial data until all data are provided; however, the return may move forward, allowing for some preparation to occur. The receipt of some data is outside the influence of even the client, as certain organizations have different timelines for providing tax documentation to recipients.

A separate fishbone analysis addresses the waste of waiting with regard to WIP tax returns not moving immediately through the 1040 process. This analysis is illustrated as Figure 7.

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**Figure 6.** Fishbone analysis for defects within tax preparation



**Figure 7.** Fishbone analysis for WIP workflow delays

Figure 7 illustrates that the root cause of WIP delays results from a historical focus on scheduling returns with staff members who are familiar with the client, although those individuals may be out of the office for other work assignments, such as auditing. It further illustrates that this scheduling emphasizes expertise of staff without recognizing that many processes are now standardized. A contributing cause is the lack of visual cues to alert in-office staff members of outstanding work to be completed.

The analysis of the WIP delays allowed for further discussion into the work assignments of partners. Delays often occurred, as indicated in staff interviews and the in-house surveys, when partners were out of the office, but desired or were required to sign their own clients' returns. This practice was explained as historical, representing "the way we always did it."

A last point of discussion, done without the facilitation of the fishbone, but rather by way of the 5-why's technique, was why clients did not retrieve their returns from Sharefile®. The analysis is illustrated as Figure 8.

Figure 8 provides the root cause to this particular issue is that the firm assumed that clients understood the attributes of Sharefile® and its use. As a contributing cause, when clients e-mailed the firm about Sharefile® questions, e-mails went unanswered, as staff were not available or out of the office.

*Pass-through filing date: shift in efficiency*

The shift in efficiency of the of the 1040 management process as a function of the pass-through filing date was discussed with staff and managing partners. Consistently, all indicated the cause for this shift was a reallocation of resources to the 1040 management process once the pass-through filing date had passed:

*RQ2.* For identified causes resulting from *RQ1*, what recommendations might be considered that will allow the firm to readily implement actions to benefit its profitability with the next tax year?

Staff members interviews elicited suggestions for improvements to the 1040 process based on the barriers they identified (Table V). The researchers reviewed their responses and compared them to the data-developed causes to ensure actions would target these causes. Recommendations were also gathered from quality and accounting practitioners. This focus

Problem: Clients do not retrieve tax return from Sharefile®					
Why 1	Why 2	Why 3	Why 4	Why 5	
Clients wait to hear from the firm that taxes ready	They do not realize they enrolled for Sharefile® tax retrieval	The intended use of Sharefile® was not clearly made apparent to them	There was a lack of communication	Assumed clients understood the system	
		No notification exists from the system to let clients know they are enrolled	System issue; outside sphere of influence		
		No notification from the firm indicating expectations of use of Sharefile® tax retrieval	Assumed clients knew to retrieve taxes	Assumed clients understood the system	
			No singular email address used by firm to monitor questions regarding Sharefile® tax retrieval	Assumed clients understood the system	

**Figure 8.** 5-why's analysis to determine Sharefile® client tax retrieval wait

group consisted of two members of a local section of the ASQ who specialize in service quality, one practicing accountant from a firm similar in size to the research client firm and four of the research client's managing partners. The group concurred with the intent and feasibility of the recommendations, keeping in mind that the firm wanted to implement these recommendations in prior to or during the next tax season. The results are presented in Table VII. A detailed discussion of the proposed recommendations follow.

While these recommendations are not exhaustive, reduction in any of the wastes identified by the study may improve the 1040 process and hopefully the firm's bottom line. Each suggestion is described briefly here.

To reduce defect and waiting, which results from such defect, the firm should dedicate staff members to serve as "tax administrators." These individuals would be responsible for learning the capabilities of the software system at the firm so that human defect in terms of cover letter preparation can be eliminated by automation. Default settings include managing tax organizers in addition to cover and filing letter preferences. It is necessary to work directly with the tax software company to ensure the comprehensive use of such defaults. Further, once these settings are understood, they should be validated prior to use. In this way, the automation facilitates standard work, thereby minimizing defect and resulting waiting waste. Further, if employees are reluctant to take on the additional responsibilities of tax administrator because their time would not be billable, the firm may consider creating an internal customer code for this work. This way employees could commit the hours necessary to successfully plan for busy season without the negative consequences of losing billable hours needed to reach their annual goal.

Next, the firm should try to manage 1040 issues as they arise and not wait to address them. Short but daily standing or "scrum" meetings would allow the team to know what

Waste category	Specific issue	Cause	Proposed recommendations
Defect	Cover letter defects	Not utilizing project management software to capacity to generate letters	Dedicate staff members to serve as "tax administrators"
	Tax preparation errors	Changing tax regulations and software nuances	Scrum meetings to counter errors in real time and communicate to all staff members
Waiting	Missing tax data	Clients late in providing information to firm or have not received forms from organizations due to government set time frames	Determine if enough data are available to begin preparation process. Contact client for updates
Waiting	WIP delays	Lack of visual cues to manage pending WIP. Historical scheduling according to client and expertise with no regard to in-office availability	Establish pull processing through Kanbans. Assign staff members to returns based on availability to complete return for time in office, generally without regard to client
	Partner review delays	Historical preference to review own clients	Assigning more reviewers other than partners
	Sharefile® tax retrieval delay	Assumed clients understood full use of Sharefile®	Develop and communicate Sharefile® usage policies to clients
Pass-through filing date: shift in efficiency	Efficiency increases in the Form 1040 process after the pass-through filing date	Resources reallocated to the 1040 process after the pass-through date	Implement above recommendations to improve efficiency in the 1040 process and consider same recommendations for the pass-through processes to reduce resource consumption

**Table VII.** Recommendations for client's improvement to the IRS Form 1040 process



issues exist or are arising in any of the process points as well as any priorities which may need to be managed (DeLong, 2019). This activity can work to minimize defect, smooth workflow and minimize waiting and motion, as well as any other wastes the team sees in real time. Related to this recommendation is the idea that returns should always be moving forward through the process; as such, unless the return is egregious in both the nature and amount of errors, the reviewers or preparers should correct the errors themselves. These errors or issues would then be discussed with staff at the standing meetings with emphasis on the entire process and the elimination of potential repeats moving forward.

A third recommendation is to have staff, or first-year interns where available, review incoming client data, comparing it to the prior years' tax organizer to quickly determine if data are missing. Only client data that is determined to be substantially complete (a percentage perhaps to be determined by the firm) would be scanned and entered into the preparation process. If material amounts of information are missing, the client should be contacted immediately. This action will help to eliminate the picking up and putting down of returns that ultimately increases conversion days and WIP throughout the process. Additionally, this activity assigns staff members with work they can certainly do, better utilizing their time.

Fourth, unless the returns are high-profile or require personalized attention, they should be prepared immediately rather than assigned to specific staff. The firm can establish Kanbans (Japanese, meaning signboards) as visual signals to alert staff that a return is ready for the next step (<http://leanmanufacturingtools.org/kanban/>). In this way, files would not wait for specific staff. Kanbans (in a firm, perhaps centrally located bins) could be established for each process step. Files should be pulled from the Kanbans using a first-in-first-out system. In this way, the firm would be managing the returns according to "one-piece flow," a more efficient method to manage workflow consistent with lean practices, which has been proven to reduce WIP (Mullholland, 2018). This recommendation would also require a "gatekeeper" or individual in charge of monitoring the Kanbans to ensure that no return is waiting for more than 24–48 h before moving along in the process. Waiting should be minimized or eliminated at all points. Returns that are waiting specifically for K-1s from pass-through entities (not available until after March 15) should be partially prepared and returned to the Kanban noting the missing K-1s, or extended, per the next recommendation.

A fifth recommendation, also related to the alleviation of waiting, is the careful assignment of returns or other tasks that can be finished completely in one sitting. It is unavoidable that some staff will be in and out of the office for various reasons such as audit work during tax season, making it difficult for them to start and complete larger tax returns while they are in. As such, assigning jobs that can be taken from start to finish during in-office time for these individuals will reduce idle time on task. Examples of such tasks might be zero balance due or fixed fee extensions, standalone LLC filing fees or other tax work that can be completed early in tax season. Identifying these types of returns, and only doing the necessary amount of work on them during tax season can drastically reduce overproduction waste. For example, if certain S Corporations are always extended, only the extension should be prepared during tax season.

To further minimize waiting time, the firm should consider assigning more reviewers to 1040 work, rather than having partners directly review their own clients. Adopting this recommendation would afford reviewers more opportunity to broaden their skills and client knowledge, while allowing partners to engage in higher value-added work. This also allows senior managers to champion lean efforts as it embraces the ideas of using human talents (Staats and Upton, 2011).

The firm should consider organizing its Sharefile® usage policies, so that clients can fully understand how and when to use it. A lead administrator, or at least one e-mail address should exist for Sharefile® so that it can be continuously monitored.

To reduce the need to reallocate resources from the pass-through filing process to the 1040 process after the pass-through filing date, the firm should implement the recommendations focused on defect and waiting. The pass-through filing process should also be examined for similar issues, and if identified, these same recommendations may assist in improving those inefficiencies as well. In this way, the need to reallocate resources may not be necessary, as waste that consumed the resources would be minimized.

### Discussion, contributions and limitations

The subject accounting firm was well into the planning stages for the 2018 tax season when the researchers' recommendations and draft report was presented to them. The firm intended to implement as many of the recommendations as was feasible. Any that may not have been implemented in 2018 would have to be postponed until 2019. A complicating factor in full implementation was a major overhaul in the US Tax Code and the format for 1040 reporting effective in 2018. In any case the firm indicated that they were ready to embrace the principles of Lean in their 1040 process and would be ready to apply these recommendations to the pass-through filings process in the future. The results of implementation will be studied at the conclusion of the 2019 filing season, in the Summer of 2020.

The findings of this case study support the extant literature with regard to Lean. The data collected support that areas of waste do exist in Form 1040 process, consistent with those categories defined by earlier researchers (Ohno, 1988; Sutherland and Bennett, 2007; Hicks, 2007). No evidence existed in this case study to support the findings of Suárez-Barraza *et al.* (2016) with regard to the additional twenty-first century muda categories. However, this study does not discount the findings of Suárez-Barraza *et al.* (2016), as interviews and data collection methods may not have been broad enough to capture these particular muda areas.

Notably, this case study appears to identify predominant wastes as defects and waiting. This case finding is inconsistent with what might be expected in manufacturing, where the predominant waste is generally overproduction (Aka *et al.*, 2019). As a result, we propose that these categories of waste (waiting and defect) may indeed be the predominant forms of waste in service organizations and require further research.

The use of diagramming facilitated the problem-solving efforts for this case. Such use of graphical representation and the success of that representation is consistent with Dinis-Carvalho *et al.* (2018) who provide that value stream mapping and waste identification diagramming are robust tools that facilitate waste identification.

The significance and contribution of this case study to the literature lies in that while decades of research have focused on the elements and application of Lean principles, including lean manufacturing or production, supply chain management, product development and leaning the entire enterprise, only an estimated ten percent address non-healthcare service industries, and of those articles, 70 percent concentrate on eliminating waste in the supply chain (Jasti and Kodali, 2015). This study is narrowly focused on a specific service sector (public accounting) and on internal production processes more than external supply chains. We identified specific areas of internal production waste including defect, waiting and in the process of our investigation, identified a significant shift in process efficiency due to resource allocation. While researchers often propose models or frameworks for subject producers to consider (e.g. Petterson, 2009), research on specific implementation strategies are deficient. This study provides detailed implementation guidance aimed at the firm's specific waste targets, specifically waiting and defect. Other non-healthcare service industries, including financial and accounting firms of similar size or function, may find these areas of waste relevant and adopt similar strategies for eliminating or reducing them.

This study has some limitations; one being the inability to capture exact cycle times for each of the firm's process steps. It would be helpful to track cycle times with the implementation of a Kanban system, to collect data needed to make better decisions going forward. Being able to translate time to dollars allows for a more robust understanding of what financial gains can be experienced as a result of improvements. A second limitation is that the data on staff performance were gathered via interview rather than through direct observation. Direct observation of processes might have helped identify other areas of waste, such as those advanced by Suárez-Barraza *et al.* (2016) and further opportunities for improvement. Additionally, direct observation would provide more objective data rather than data that may be biased from staff members. In this study, the team did not gather data on the pass-through filing process. Given that this process appears to have inefficiencies, this would be a good area for further study to validate if wastes similar to those within the 1040 process exist. Accordingly, this type of study can be applied to each separate revenue stream within a firm to identify inefficiencies and opportunities to improve processes.

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#### About the authors

Dr Lisa M. Walters is Associate Professor of Operations Management at the State University of New York at Fredonia. Her research interests include study of the application of quality improvement principles and techniques to achieve business and organizational sustainability, competitiveness and regulatory compliance, where applicable, as well as the application of quality techniques to pedagogical concerns. Dr Lisa M. Walters is the corresponding author and can be contacted at: [Lisa.Walters@fredonia.edu](mailto:Lisa.Walters@fredonia.edu)

Professor Mark A. Nickerson, CPA, CMA, MBA, is Lecturer of Accounting at the State University of New York at Fredonia. His research interests include individual and corporate taxation, credits and incentives and small business sustainability.

Dr Linda A. Hall CPA, CMA, CGMA, is Professor of Accounting at the State University of New York at Fredonia. Her research focuses on current trends in accounting and case studies for accounting classroom use.

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