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### “Contemporary Breadlines”: A Field Study of Fast-food Drive-thru Service Delivery

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# **“Contemporary Breadlines”: A Field Study of Fast-food Drive-thru Service Delivery**

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## **ABSTRACT**

This study focuses upon US fast-food drive-thru delivery, assesses its cycle times, identifies its common delays and inefficiencies, and proposes solutions for improvement. The author, having become a live-alone bachelor since 2012 admittedly has routinely been a regular fast-food consumer, and as a researcher has over the past 4 years convenience-tallied this field study of fast-food drive-thru delivery. The average drive-thru wait time for these fast-food establishments was .81 minutes with average processing times of 3.6 minutes for a total average of 4.45 minutes with an average standard deviation of 2.1 minutes. This data suggests statistically (assuming a normal distribution) that: a) 2/3 of drive-thru customers will experience a wait that is  $4.45 + 2.1 = 6.55$  minutes or less; b) if a 95% confidence level is desired for any/all customers that a  $4.45 + (2.1 \times 2) = 8.65$  minute cycle time would have to be acceptable to most customers; c) if a 99% confidence level is desired that a  $4.45 + (2.1 \times 3) = 10.75$  minute cycle time would have to be acceptable to most customers. While most drive-thru customers are likely satisfied with the average of 4.45 minutes, 1/3 of drive-thru customers are experiencing cycle times of greater than 8.65 minutes. Thus it is the variance in drive-thru service times and the various delays that cause it that seem to have the greatest opportunity for delivery improvement. These variances invariably were caused by: a) Long customer/issues; b) Poor speaker/mic; c) Staffing; d) Incorrect order; e) Food availability; f) Tech/PC issues; g) Poorly planned special; h) Poor menu organization.

## **INTRODUCTION/BACKGROUND**

Most U.S. consumers at one time or another have wanted or needed to conveniently drive-thru a fast-food restaurant to purchase and consume a meal or drinks. Similarly, most consumers have also encountered drive-thru delays at one time or another that caused them to mutter the “catch-question” “Why do they call it “fast’-food?” Today, fast-paced lives and work, as well as the need for cost-effective food budgets and time management, have led consumers more and more to the fast-food line. Today the U.S. fast-food industry is a \$200 billion industry that accounts for approximately 12% of Americans’ food consumption. While recent focus on healthy diets and obesity have helped stall fast-food’s growth and shifted its consumption patterns, the need or desire for convenience and the economies-of-scale of fast-food have allowed it to hold its market share and volumes.

Also perpetuated in fast-food demand is the preference of drive-thru service; today approximately 2/3 of all fast-food customers use the drive-thru, often resembling contemporary breadlines during peak times. However, despite the steady flow through the drive-thru of fast-food’s 232,000 outlets, the reported industry average processing time has not decreased but

actually increased to approximately 3 minutes (not including “queue” time). With the volume of food being consumed via fast-food drive-thru today, it becomes increasingly important for the industry and consumers to experience favorable and desirable delivery cycle times.

### **Definitions**

There are some semantic debates and confusions on the uses and definitions of the terms lead time, queue time, processing time, cycle time and wait time. For the purposes of this research the following definitions will be used:

- a) Lead time is most often used as the advanced time needed to place an order so that it will be received at or by some later identified or specified time; we will not use this term in this research;
- b) Queue time = the time the customer waits in line and/or at the speaker before their order articulation begins;
- c) Processing time is considered all time expended from the start of order placement to completion of order fulfillment;
- d) Cycle time = queue time + processing time
- e) Wait time is a confusing term since the customer waits during the entire drive-thru process; this term will not be utilized
- f) Correct order is an order that has been correctly filled, including the correct items with the proper options and/or accoutrements paid at the correct price. (This study does not enter into the subjective assessment of food quality – that is, if the items taste as they should and/or are prepared properly).

### **Operational Process Perspectives**

An operational perspective of optimization and lean is utilized in the methods and analysis and implications of this study:

- a) Drive-thru delivery is seen as a process that should operate “in-control” and at levels of defects and/or delays that are acceptable to the customer and marketplace. Two key quality system tenants come to mind when we review the drive-thru delivery opportunities in fast-food;
- b) 80% of defects are systematic and thus the responsibility of management (Fortunately all are corporate stores or franchises under significant corporate operational direction, so the recommendations for outlets are thus “system/corporate-wide”.);
- c) The people who best understand how to improve the system are those that work with it every day – the employees;
- d) The Just-In-Time (JIT) theory of “rocks in the stream” should be embraced to methodically identify and remove (drive-thru) process inefficiencies and disruptions.

## **METHODS**

This study comes from the author’s own measurements, experiences, and observations from approximately 5 visits per week from 2012 to 2016 to various fast-food locations in NC and the US, primarily surveying Cookout, Hardee’s, Wendy’s, McDonalds, KFC, Bojangles, and Burger King, and including breakfast, lunch, and dinner meals at various times. Due to the nature and accuracy limitations of field study tallies and assessments, fast-food stores are generically

identified by type versus brand. During drive-thru visits the author kept a tally sheet of 968 logged visits' cycle time estimates from his watch and of delay causes by checking pre-categorized cause columns. The average order was =>\$6.00 and frequently included special and/or value menu items. No judges or second assessments were utilized or available, and the pre-categorized causes were identified and developed as visits progressed. The marked columns were hand tallied manually to create summary information. Times and checkmarks were added real time in approximately 50% of the visits; traffic patterns and/or congestion caused the other 50% of visits to be tallied after-the-fact. The marked worksheets were eventually manually counted into the summaries in Tables 1 and 2.

## RESULTS

### Drive-thru Order Cycle Times

**Table 1**  
Summary Convenience-tally Data Table

Type fast-food	# of orders	Avg. queue time mins	Avg. process mins	Avg. cycle time mins	Std Dev mins	Client delay and/or long orders	Staffing	Bad order	Food availability	Tech /PC issue	Spkr /Mic
Chicken +Brkfst1	140	.90	3.5	4.4	1.9	21	4	5	4	2	6
Burger +Brkfst1	147	.75	3.9	4.65	2.7	18	7	5	5	3	8
Burger+1	97	1.1	4.1	5.2	2.3	13	9	4	4	4	12
Burger +Brkfst1	275	.70	3.2	3.9	1.8	48	4	14	13	4	21
Chicken +Brkfst2	117	.85	3.8	4.65	2.3	30	10	6	7	3	13
Burger +Brkfst2	134	.90	3.0	3.9	2.1	27	6	6	5	3	6
Burger+2	139	.65	3.7	4.35	2.2	23	9	8	8	5	7
<b>TOTAL</b>	<b>1049</b>	<b>.81</b>	<b>3.6</b>	<b>4.45</b>	<b>2.1</b>	<b>180</b>	<b>49</b>	<b>48</b>	<b>46</b>	<b>24</b>	<b>63</b>

The average drive-thru cycle time these fast-food establishments averaged queue times of .81 minutes with average processing times of 3.6 minutes for a total average of 4.45 minutes with an average standard deviation of 2.1 minutes. This data suggests statistically (assuming a normal distribution) that:

- 2/3 of drive-thru customers will experience a wait that is  $4.45 + 2.1 = 6.55$  minutes or less;
- if a 95% confidence level is desired for any/all customers that a  $4.45 + (2.1 \times 2) = 8.65$  minute cycle time would have to be acceptable to most customers;
- if a 99% confidence level is desired that a  $4.45 + (2.1 \times 3) = 10.75$  minute cycle time would have to be acceptable to most customers.

While most drive-thru customers are likely satisfied with the average of 4.45 minutes, 1/3 of drive-thru customers are experiencing cycle times of greater than 8.65 minutes. Thus it is the variance in drive-thru service times and the various delays that cause it that seem to have the greatest opportunity for delivery improvement. In random interview discussions with other consumers by the researcher, a qualitative assessment of acceptable cycle times was gained that reveals that while most drive-thru consumers are content with a 5 minute or less cycle time, most also become proportionately dissatisfied as the cycle time increasingly exceeds 5 minutes. While a 99% confidence level for processes involving customer participation may be excessive, certainly 95% or 2 standard deviations (95% confidence) intuitively seems an appropriate goal for any controlled service process. Therefore, the industry and its various chains should work to gain a consistent cycle time whose mean plus 2 standard deviations approximates 5 minutes. This requires efficiency improvements and/or reduction in delays in the drive-thru process.

### Delay Causes

Over 40% of all orders experienced some type of delay of 2 minutes or more. Ironically, by far the greatest contributor was due to delays associated with a particular customer and/or their order; this occurred in 17% of the delayed orders, and was equal to the collective impact of the next three largest delay causes (see Table 2).

**Table 2**  
**Delay Causes (any delay of more than 2 minutes was logged; most averaged 2-4 mins)**

Delay Cause/Type	% orders w/ delay	Weighted mins. of cycle time
Long customer/issue	17.0	.51
Poor speaker/mic	7.0	.21
Staffing	5.3	.16
Incorrect order	4.6	.14
Food availability	4.3	.13
Tech/PC issues	2.0	.06
Poorly plan'd special	NA	Captured elsewhere
Poor menu org.	NA	Captured elsewhere
<b>TOTAL</b>	<b>40.2</b>	<b>1.15</b>

Note: While some orders had multiple delays, this was the exception.

## IMPLICATIONS

### Cycle Times

While the national average for fast-food drive-thru cycle times is approximately 3 minutes (compared to our sample's 3.6), this is only the processing time and does not include the queue time prior to reaching the speaker and beginning to order. When queue time is added to processing the 3.0 easily may well approach 4 minutes. However, the mean or average wait time is not the issue for this process; our statistics indicate that the variance of this process even when statistically "in control" routinely carries a standard deviation of 2.1 minutes or over 50% of the average cycle time due to the cited delay causes. The impact that reducing or eliminating these

delays could have on the average and standard deviation of cycle times can be mathematically projected. Reducing all of the delays would lower the mean and standard deviation respectively by a minimum of .63 minutes (21% x 3 mins); this would result in:

- a) Cycle times of  $4.45 - 1.15 = 3.3$  mins. avg.;
- b) Std. dev. =  $2.1 - 1.15 = .95$ ;
- c) 95% confidence:  $3.3 + (2 \times .95) = 5.2$  minutes cycle time which is likely acceptable

### **Difficult Customers and/or Orders**

17% of orders had delays that seemed to be connected with the size or convolutedness of the customer and/or their order; this often seemed to be associated with full cars of multiple real-time ordering passengers. Resolving this delay cause alone could reduce cycle times considerably:  $3.94 + (2 \times 1.59) = 7.12$  mins. Not surprisingly, there was no order size limitation posted at any drive thru nor was there any sign encouraging advanced order planning. Fast food chain personnel displayed a seeming reluctance and/or inability to handle difficult or long orders; this is likely due to the perception that "the customer is always right or come's first", and/or that they cannot by policy or perception, ask a customer to move to the side and/or come inside due to their order/nature. Unfortunately, these servers do not realize that while they are attempting to please one customer that they are likely risking dissatisfying several others that are further delayed. Fast-food chains need clear policies and operating procedures for customers that take more than a minute or two to order or pay and pick up orders. While it is the customers' job to "get what they want", it is also the store's job to ensure that "how they get it" fits operational parameters.

### **Poor Speakers/Microphones**

When order delays occurred at the speaker, it was difficult to ascertain if the issue was due to poor tech or merely long orders and decisions. However, the researcher himself experienced considerable order difficulty on a number of occasions where the order took twice the needed time due to unclear diction and/or inaudibility. This cause conservatively if addressed could further improve drive-thru cycle times and variation by .21 minutes. This ironically appears to be a common malady at many fast-foods' drive-thru; when the researcher inquired as to the reason, invariably the explanation was that it cost too much and/or that the store was reluctant or hesitant to ask the corporate/home office for a replacement/improvement.

### **Flexible Staffing**

While discerning staffing issues was difficult and perhaps understated, at least 5% of orders were delayed due to the in-availability of and/or delay from a worker. Again this like all delay causes is a systematic issue that is managements' responsibility to resolve with staff input; only the workers themselves are in a position to troubleshoot and/or resolve these type delays. These delays if resolved would further improve cycle times and variation by .16 minutes. It should also be noted that while there were many server configurations of how orders should be handled and filled, no particular schema of a particular type was noticeably better or worse (unless it is perhaps Burger+Brkfst1, which had the lowest cycle time and variation).

### **Incorrect Orders**

This delay category is likely muddled and mixed with speaker and mic issues; the fact that these tech issues are so prevalent increases the probability that servers make order errors that must be

confirmed and/or corrected at the pay and/or delivery window(s). These type delays were experienced in 4.6% of the orders and if removed could potentially improve average cycle times and variation by .14 minutes. Again, discerning whether the greatest opportunity is in speakers/mics versus training servers can best be determined by the servers themselves.

### **Food Availability**

Delays occurred in 4.3% of the sample's orders due to the availability of food or pre-prepped foodstuffs. This ranged from a deep fry grease change, to coffee replenishment, to running out of fried chicken, etc. While outlets can rarely anticipate when order surges deplete their inventories abnormally, some percentage of these delays were likely avoidable and can be anticipated more proactively. Discerning the former from the latter is again the responsibility of management with the help and insight of their staffs. This delay cause has the potential of improving the average cycle time and its variability by .13 minutes.

### **Tech/PC Issues**

There were several occasions where "the system" being down forced servers to fill an order manually; this normally added perhaps two minutes of extra time or delay in the cycle time. 2% of the orders experienced this delay and impacted average cycle time and its variation by .06 minutes. This is likely a random and somewhat unavoidable delay cause.

### **Pulling over versus "removing rocks" from the system**

It is important to realize that when pulled-over in this study the cycle time clock keeps running; this helps partially explain our .6 difference between this study's average cycle time and industry statistics. From an operational perspective, there are theoretical pros and cons to the pull-over relief technique; this technique is also used in Toyota's production system and in Just-In-Time processes, but ONLY when all other real time recovery efforts have been exhausted. Unfortunately in fast-food, the "clock" has become a means in and of itself, rather than a means to the end result of improving processes and delivery efficiencies. Ideally outlets will better train and educate their employees on the true purpose of clocking the order so that these employees can better contribute to improvements in measuring and problem solving.

## **LIMITATIONS**

While this study has reasonable integrity due to its being a first-hand observed tally of consumer experiences by a single experienced researcher, it nevertheless has limitations that, while perhaps not compromising the validity of the overall measurements, findings, and observations could potentially create validity issues for the precise numbers and statistics cited in the study.

### **Quantitative measurements**

Quantitative measurements for the study were taken conveniently using the sweep/second hand of the researcher's watch; no stopwatch was utilized. Consequently there is some minor reaction time and eye movement that likely created errors in the range of up to five seconds or 1/12 of a minute, although this was compensated for in the readings themselves. Nevertheless, this again may impact the validity of the measurements exactness and precision, but not the overall results and/or conclusions of the study.

### **Difficulty of Discerning Causes**

As mentioned previously, because the researcher-customer is assessing and analyzing defect causes from outside the process/system, the chances of overlapping causes, multiple causes, and wrong causes being identified is perhaps the greatest risk regarding validity. Although the researcher has an operations background that well understands the basic processes of fast-food delivery, only internal observations will have optimal accuracy. While it is likely that these causes are all contributors to drive-thru delay, the validity of the order and/or magnitude of any single cause could be questioned.

### **Delayed tallies from memory**

As previously mentioned, approximately 50% of the data was logged “after the fact/ (visit)”. While the researcher had good recollection of most visits and tried to limit any delay in updating the worksheet, some visits were discarded or not logged. Too, not every fast-food visit made by the researcher was included in the study; the collection of the data was from a “convenience sample” perspective. While this may limit the insight and sample size, it has little bearing on the accuracy and validity of the data that was collected.

### **Combination and/or overlapped delay causes**

Some orders in the survey had multiple causes, although this was the exception. However, certainly the inability to know causes with certainty as well as the possibility of inter-cause relationships in the process is real and could alter the accuracy and validity of the data and conclusions.

### **Manual tallying and counting**

The risk and chance of manual errors either in scribing and/or in tallying always exists and there is a high probability that some errors have occurred. However, while this may alter the measure precision of the study, it is unlikely that so many errors occurred that the validity of the basic measurements and findings is compromised.

### **Lack of other judges or assessors**

Clearly doing a field study where observations and judgments occur and then are tallied into categories of causes is more objective with multiple judges. However, the arduousness of arranging this is outweighed by the need for a convenience sampling. Too, the operational background of the researcher may have offered better insights and judgments than a larger panel of judges without similar or aligned backgrounds.

## **FUTURE RESEARCH**

Key opportunities for additional research on fast-food drive thru delivery include:

- Broadening the scope of fast-food chains
- Utilizing a pre-determined stratified sampling versus convenience sampling
- Changing the geography to local, community, county, state, regional and/or national
- Surveys of customers and/or fast-food employees regarding delay causes
- Examining cycle times and delay causes of seated restaurants and/or self-serve chains



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## ABOUT THE AUTHOR

Dr. Jon M. Martin is an Assistant Professor of Health Administration for Pfeiffer University teaching strategy, marketing, and policy. He holds a PhD in Organization & Management, and has 25 years of operations management experience as a middle manager and executive/VP in the international and private sectors.