

What You Need To Know About **Analytics for Digital Signage**



Lights-Off Signage

You're careful. You've studied all the angles. Thought about your audience, quality content, the project's goals, hardware. You've given your digital signage project everything you have. It's now deployed, left on its own like a child leaving his/her nest to face the world.

Ask yourself this. What did you get wrong?

Be honest, you didn't expect to be 100% correct about everything. That would be news-making. "Company X deploys digital signage and gets nothing wrong!" Let's say it's very unlikely. So what did you get wrong?

Here's a scary thought: you don't know! Think about it. What are you doing to assess effectiveness? What are you measuring? And what do those measures tell you?

Without data there can be no insight. Without insight, you have no idea what to do to improve the success of your signage deployment.

That's signage with the lights off.



You Can Only Manage What You Measure

John Wanamaker (1838-1922) was a very successful United States merchant and political figure, considered by some to be a pioneer in marketing. He opened one of the first and most successful department stores in the United States, which grew to 16 stores and eventually became part of Macy's.

He is credited with coining the phrase "Half the money I spend on advertising is wasted but I don't know which half."

Put into terms that will resonate for digital signage, you can't manage what you can't measure. In Wanamaker's day, the earliest days of modern marketing, there was very little to measure. It was only until art was crossed with science that a business investment could go from creative for creative sake to something genuinely supporting the business.

Yes, we get it. Saying "science" screams complexity but, conceptually, for digital signage, it's really not that hard. All you need to do is

- Identify business goals for your project
- Define key performance indicators (KPIs)
- Collect the right information
- Visualize the data
- Act on the insight

Instead of science, let's call this ANALYTICS. We'll break these steps down later.

What is hard is overcoming the inertia of years of ignoring your data deficit. You're used to the ignorance and ignorance is bliss. In fact, it may be a conscious effort because be honest, deep down, you know you should be collecting data.

So why haven't you?

The Analytics Challenge with Digital Signage

Here's where we need to cut you some slack. What's the old saw in psychotherapy? It's not your fault....

Classic digital signage is an emitter, broadcasting information to a faceless audience. These signs are passive so there is nothing to measure. Ask yourself - right now - how can you determine the level of effectiveness, the level of success for a deployment, when there is nothing that can be directly measured.

Without interaction of some kind, signage deployments are a black box. All measures need to be second-hand - e.g., sales comparison between stores with and without signage. But that would tell you nothing about whether the signage is as effective as it could be.

Further, correlation does not mean causation. Sure, maybe sales increased in the store with passive signage, but did you control for other influencers like location, demographics, weather, or who knows what else?

We're not talking about whether there is value in classic digital signage. It is not debatable. There are clear business advantages to the adoption of digital signage across a variety of verticals and contexts. What we're talking about here is whether a given project is as successful as it can be. The fact is, there are no direct means of measurement, so no wonder you haven't done much about it.

Classic digital signage is not a fertile ground for analytics. The good news is that's changing.

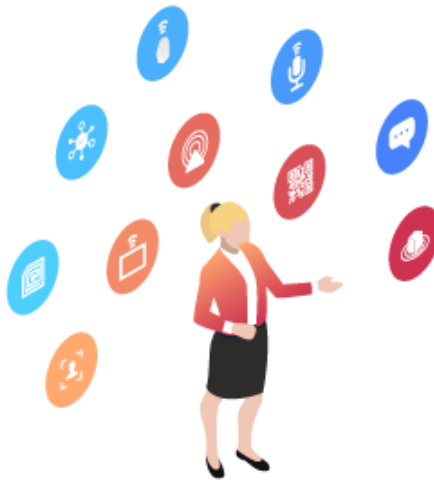


Turning a Sign Into a Sensor

A hat-tip to technology for the change. Rather than running signage as a dumb terminal, clueless to the world, technology has made it possible for signs to pull in information as well as, if not better, than their ability to push information.

How? Interaction. There are many possibilities, enumerated below, but the basic idea is that interaction leads to insight as you have a direct, first-hand correlation between signage content and that content's appeal and effectiveness.

Interaction could be active, meaning the result of a conscious action on the part of your target audience. The resulting insight is into the preferences of that audience. Not just what appeals to them but, on the flip side, what does not.



- Touch: The most universally embraced approach, understood without explanation across ages, demographics, and cultures.
- RFID/NFC: Bringing tagged objects to a kiosk for more information. Not nearly as common but the tech is well understood. Retailers and museums have been first adopters.
- Voice triggering: Alexa, Cortana, Siri, Google.... Used to be that just transcription of the spoken word was a challenge. Now we're running our homes by voice. Signage has the challenge of dealing with environmental distraction and inappropriate use, but the hurdles are dropping.

- Beacons: Conceptually, just a variant of RFID/NFC. The underlying tech is different but the result is the same.
- Object recognition: A spin on the RFID/NFC/beacon approach. Here, the digital display uses cameras to identify objects placed directly on the screen. Even rotation angle can affect how the placed object is understood.
- QR or Bar Codes: Older thus somewhat more familiar tech enabling visitors to either bring objects to be scanned or scan displayed codes in order to view info on their phones.
- Gesture: It's on the wane (RIP Microsoft Kinect) but both start-ups and the big guys (see [Google Soli](#)) continue to work at enabling untrained bystanders to interact via body motion.
- Internet of Things: Here we're talking about the facilitation of interaction with connected objects, using a screen (for example) as a mediator between the audience and the object.

There are also passive means of interaction where anonymity can be preserved while information is still gathered about the user.

- Facial analysis: Use of camera-initiated pattern matching to identify gender and age range without recording any specific facial features.
- Eye tracking: Amazing but true, there is tech enabling businesses to track where eyes are focused, identifying hot spots of attention.
- Motion: Often used to initiate an attract loop of some kind, can be paired with group detection to keep track of the number of onlookers.

Finally, there are machine-to-machine interactions that bring context to the interaction. Such interactions are most commonly mediated by Web services, connecting each screen to its environment via APIs. The context could be information about the particular visitor (e.g., via their Frequent Shopper account) or about the world around them, like the weather, time of day, sports score, or anything else you can think of.

Imagine the rich data mine a sign can become if thought of as a sensor and not just an emitter!

Building an Analytics Competency

So we've established that there's a lot of data out there. The trick is getting your hands on good data.

Yes, not any data. It's easy to collect ANY data. You can be swimming in data in no time. Or better put, you could be drowning in your data lake. It's hard to find the needle (find the fish?) when you're drowning.

The remainder of this paper lays out the steps you should understand and embrace to ensure the collection of actionable data that can lead to real, meaningful insight. With practice - and with the help of quality hardware and software - there is no reason you couldn't become an analytics superstar.

Let's get to work!

1. Identify Business Objectives

Start by asking yourself (your team), what does success mean for this signage project. What is/are the objectives?



Analytics aside, you should be doing this anyway. When you create a specific objective, you give your team a greater chance of achieving that objective because they know precisely what they're working towards. Further, it justifies the expense in time, cost, and personnel, finite resources that could be apportioned elsewhere. What makes a good objective? They should be [S.M.A.R.T.](#)

- Specific: No room for misinterpretation. Think of the five w's (who, what, when, where, and why).
- Measurable: Clear measures of progress.
- Assignable: No ambiguity about who owns what.
- Realistic: Achievable with available resources.
- Time-bound: Commitment to a timeline for achieving results.

Objectives tend to require the same level of iteration one would expect from overall project delivery. They often start either too ambiguous or, upon reflection, insufficiently relevant or meaningful. In addition, different members of a project team might have different perceptions of objective priority. Can they coexist or are there trade-offs?

Indeed, it's best to keep the number of objectives down to a minimum. The fewer "masters" a signage deployment must serve, the more likely for project success.

Here we wrap up by highlighting the M in S.M.A.R.T. - Measurable. This is key. If you can't measure it then you can never be sure if you are on the right track. You will never know if the objective is achieved. You won't even know if you're close! In retrospect, how could you EVER sign off on a signage deployment without knowing the objective and what to measure to ensure success?

Thank goodness for this paper... 😊

2. Define KPIs

Key Performance Indicators - KPIs - are measures used to evaluate the progress and success of a project. These measures are key! Ok, that's not

helpful. This is better: KPIs are not just any measure, they're actionable. They shine a light on which objectives are being met, which are not, and what you can do to improve the outcomes of both. They get you through that swamp of data we wrote about earlier, focusing on the information that matters.

Let's use an analogy. I think we'd agree that one of the main objectives of the human body is to stay alive. Medical professionals have identified a set of health KPIs that enable them to assess that health during the minimal time they have with you during your physical. Blood pressure, weight, cholesterol, that sort of thing. With these KPIs - represented by a number and a trend over time from previous measures - your doctor can determine your level of health and how well you've been progressing.

Some KPIs are best considered as having a target while others as having a targeted trend. Collectively, they communicate the essential facts about how well an objective is being fulfilled.

The hardest thing you will have to do is identify the right KPIs for your signage deployment. Just because you can measure something doesn't mean you should. There are lots of measures that don't, by themselves, tell you anything about progress towards an objective. Worse, other measures are linked to objective success but they just don't give you actionable insight.

Sit down with your well-iterated objectives and imagine what the ideal KPIs would be. Fantasize. Don't limit yourself to what you know about the technology you'll be using. Invent the perfect measures and then go through another iterative process to refine those ideal measures into something achievable.

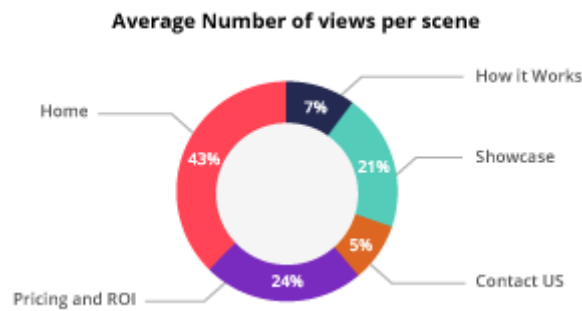
To help you think things through, there are three broad classes of KPIs to consider:

- **Design:** How well is the project design supporting delivery of the given objective? Is there anything about the content, layout, sequencing, location, etc. that can better lead toward success?
- **Operational:** How well is the underlying hardware and software supporting delivery of a given objective?

- **Business:** What does management need to know about the project to be sure that the objectives are being fulfilled?

Let's say you're creating a POS kiosk for a movie theater. An obvious objective would be Sales per Kiosk. (Pick a dollar amount that makes sense for you.)

- Design KPIs
 - Average dwell time (i.e., the amount of time each visitor spends at the kiosk)
 - Conversion rate (i.e., when the visitor buys a ticket)
 - Conversion rate correlated with gender and age range
 - Frequency of requests for help per screen

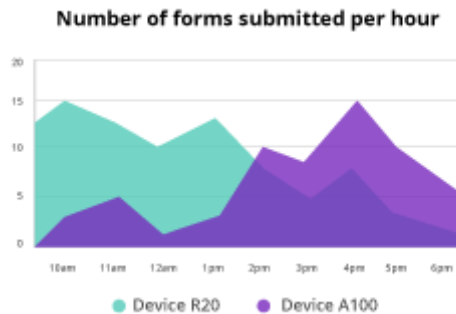


- Operational KPIs
 - Total downtime
 - Average response time



- Business KPIs
 - Revenue per kiosk (correlated with the weather at that location)

- Ratio of new sales vs. pre-paid pick-up
- Percentage of overall ticket booth sales
- Movie popularity based on sales and kiosk location



One last point. Not every measure needs to be a KPI. In fact, there will undoubtedly be many secondary measures playing a supporting role. They may not directly correlate with objective fulfillment but they may clarify next steps, progress quality, or areas of concern. Broadly, they could provide color for next steps, lighting the way.

3. Collect Data

Now that you've identified your KPIs, it's time to collect the data. To do so, you need to somehow instrument the kiosk software so that it reports the required data when relevant events occur.

It's akin to Web analytics but harder to pull off because there is no universal kiosk software. Google, for example, can make many assumptions about what is happening under the covers when visitors are browsing a website. As a result, it is easy for them to identify and collect a host of information about those visits.

With kiosk software, you'll have to be proactive and identify options enabling instrumentation. Unfortunately, most signage CMSs offer little to nothing in the world of data collection. Why? **Classic digital signage offers no level of interactivity so there was almost nothing to measure!** And since their ability to offer interactive options is limited, there's only so much data they can collect. Further, the available data options are often predefined so you better hope they happen to correspond with your KPI data needs.



Ideally, your search for a signage CMS option would treat interactivity and analytics as first-class requirements. Doing so will ensure the highest level of flexibility and depth for collecting data about what your target audience is doing, who they are, and context that may influence their choices.

To conceptualize your needs, consider what events would indicate the moments at which important data becomes available for collection. It could be when an object is touched, or a word is spoken, or an RFID tag is detected, or a device is activated. All of these triggers are clear indicators that a rich data set is ready for the taking.

How instrumentation occurs is up to the software platform. Our recommendation is to bias yourself towards options that don't require any understanding of the underlying technology. Creatives should be as capable of instrumentation via the chosen platform as a more technical member of the team.

Be sure to use the pilot phase of signage deployment to pilot the quality of your instrumentation as well. Not only will this help you identify missed critical events, it's also an early round of data and insight you can use to refine your signage and improve its effectiveness.

4. Visualize Data

Now you need to turn the collected data into insight. Typically, this is what one thinks of when hearing the word "analytics" - the analysis of data. It's

visualization using charts and dashboards so a story can be told and next steps can be identified.

Yes, you'll be using good-old bar/line/pie charts and value indicators - and many more visualizations - but the choice can be fluid. What's important is to understand that there are four types of analytics.

- Descriptive: What happened. Either a snapshot or a trend, it looks backward and thus doesn't answer the question *Why?* Most data falls into this category.
 - For example, average daily sales per movie theater kiosk
- Diagnostic: Why it happened. Could be assisted by secondary, non-KPI measures
 - For example, sales per movie theater kiosk in the context of weather, location in the theater, time of day, city, day of the week.
- Predictive: What could happen with the status quo. It's a forecast.
 - For example, expected monthly sales
- Prescriptive: What could change the status quo for the better? It's essentially automation of the manual labor applied for Diagnostic analytics. Often involves machine learning and AI.



You'll be focused on the first three classes of analytics, summarized as where are we now (descriptive), where are we going (predictive), and how did we get here (diagnostic). KPIs are typically descriptive while secondary measures assist with diagnostics. Projections to identify trends will satisfy your predictive needs.

As the era of big data is upon us, there is no shortage of data analysis software in the marketplace. You can use everything from Excel to IBM Watson. Your decision will be primarily influenced by the level of analytics skill your team already possesses. If you're like most people, it is preferable to start with simple tools oriented to ease adoption. The cost will be lower and you'll have time to build skill.

Signage CMS providers, aware of the importance of analytics, are starting to offer visualization options built within their toolset. These approaches are the perfect way to start your analytics journey and may prove sufficient for your needs.

5. Act On Insight



You've identified objectives, defined KPIs, collected data, and visualized that data. If you've done it right, you should be armed with knowledge highlighting the steps needed to either accelerate or correct project progress.

Maybe you need to revisit how visitors are encouraged to interact. Maybe the screens need to be moved to a new location. Maybe the screens are too small to be noticed. Maybe specific content should be removed, other content emphasized. Maybe new types of interactivity would be more

effective. Or maybe the project needs to be put on hold and reassessed because it's just not delivering.

Of course, few projects are a roaring success out of the gate. Changes will inevitably be required, both minor and major. Your stakeholders know this and merely need the assurance that your team is in a position to succeed. They will appreciate the clarity of your reports and will rest easy knowing the clarity of your purpose.

So iterate, as you have throughout the process, making changes to your signage and measuring the outcomes. Lessons learned will not only improve the likelihood of success, they will also influence future projects, increasing the speed with which you can deploy, monitor, and improve digital signage. It may even encourage the adoption of projects with higher technical complexity, projects that would have once seemed intimidating.

Conclusion

Analytics has always been important. It is no more critical today than it was in the past. The problem was the ease with which analytics could be applied to digital signage. Frankly, it was a huge pain unless you had a huge budget.

This is no longer the case. We've written this paper because analytics has become accessible to the digital signage masses.

The most innovative of digital signage CMSs are treating data collection and analysis as just as important as content creation and deployment. Further, adoption of these capabilities has been dramatically simplified. It's a good thing as most of us have little exposure to the world of big data.

Hopefully, this paper has made the case and lowered your fear level. Today, not only is there no reason not to do it, there is also no excuse.

Now stop reading and start measuring! Your signage will thank you.

