The State of Digital Maturity in the Packaging Industry

Companies from 28 different countries

PackIOT
Data for Action

packiot.com/digitalmaturity

Developed By:

PackIOT
Data for Action

Official Partners:

INSTITUTO DE EMBALAGENS
Ensino & Pesquisa

360 PACKAGING

PEOPLE OF PACKAGING
PODCAST

What's our job?

PackIOT is a plug-and-play, cloud-based production analytics software specially developed for the packaging industry.

We help manufacturers in decision making, boosting shop floor efficiency and reducing costs.

We are fanatical for industry efficiency, big data, machine learning and data-driven decisions.

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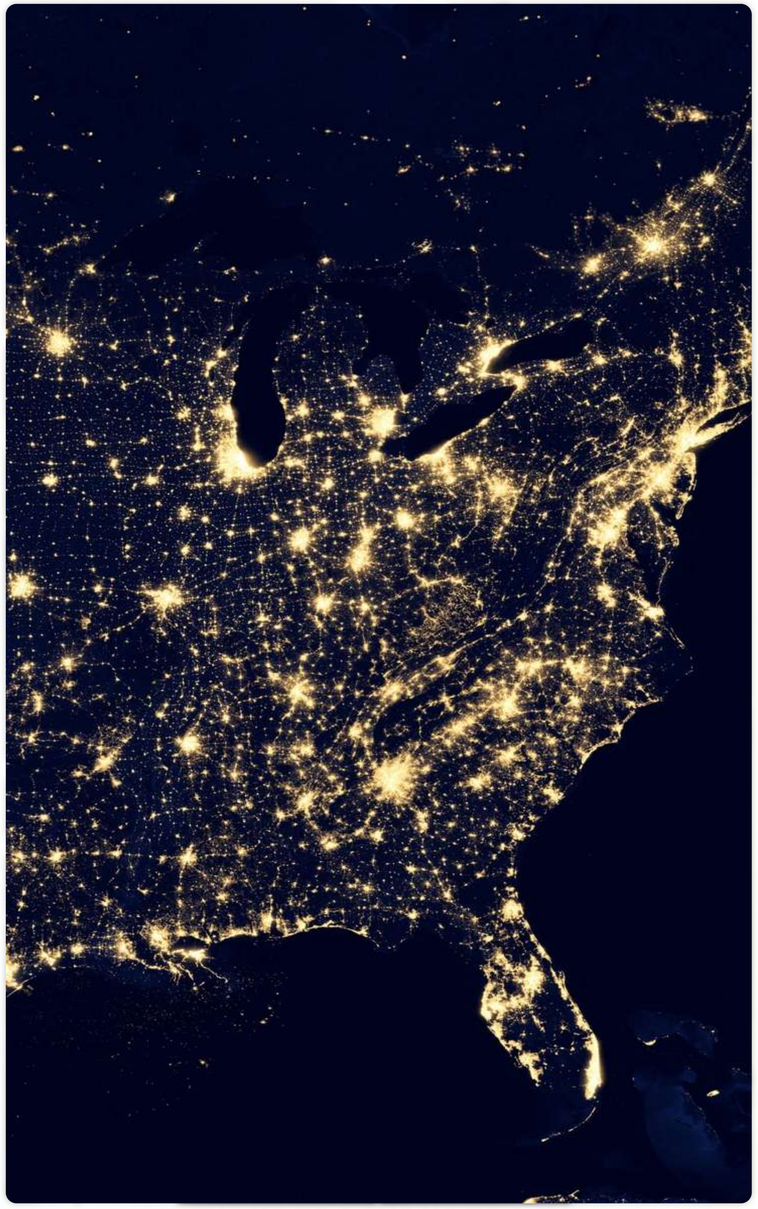


Foreword

Everyone is talking about Industry 4.0 today. Many agree that it must happen, but few know what this jargon really means or even know where to start. In my opinion the Internet of Things (IoT) and analytics can show a path to digital transformation within the manufacturing industry.

To help us better understand how dig into Industry 4.0 and digital transformation the packaging industry is, we developed our new Digital Maturity study in the Packaging Industry. We asked people from the packaging industry, from 28 different countries, to describe their factories, data collection and data analysis processes, the metrics and KPIs they follow and software they use. In particular, we were interested in understanding what is the level of digital maturity that the packaging industry is experiencing.

We also asked what kind of software and tools they have in the factories: ERP, MES, Production Analytics, PLCs, augmented or virtual reality tools and others.

Whilst going towards digital transformation might seem hard, there are simple steps that the packaging industry can take and prepare to experience the Industry 4.0. CEOs, Plant Managers, Shift Leaders and Operators are now able to create the right environment for success.

Cristiano Wuerzius
CEO at PackIOT

Key Findings

Trouble identifying bottlenecks

More than half of the industries cannot point, in real-time, where the production line bottlenecks are.

In addition to that, 12% of the companies state that identifying bottlenecks is a real struggle for them.

Only 32% of the industries can identify bottlenecks and check production data in real-time.

32%

can identify bottlenecks and
check production data in real-time.

No trends in their production

Among the packaging industries, 82% cannot point out the trends in their production in real-time.

Almost one third of the industries use manual systems to identify problems or monitor their KPIs.

18%

keep track of real-time
productivity on the shop floor.

Struggling to keep track of OEE

Two out of three companies do not have ways to monitor and keep track of their factories' OEE and productivity goals in real-time.

Half of the industries only have access to those information in specifics amount of times.

35%

can assure that they are achieving
productivity goals and keeping track of their OEE.

Automatic data collection is not a trend yet

More than 80% of the industries do not collect data automatically on the whole shop floor. And 52% still use Excel spreadsheets as a data collection and data analysis tool

One third of the companies has data collection for specific machines, and 29% only analyze data when they feel they need to.

25%

say that their process of data collection is highly manual.

Few companies know if they are on track on planned downtimes

Two out of three industries cannot be assured if they are on track on their planned downtimes.

For example, preventive maintenance, training and lack of planned orders are some of the planned downtime reasons and yet companies do not monitor those stoppage times.

35%

can be assured if they are on track on their planned downtimes.

Goals are not openly discussed

Regarding what is happening internally, the packaging industry do not have transparent communication. Only 50% of the companies have pre-shift meetings and almost 12% of them do not talk about performance goals.

Less than half of the companies have weekly C-Level meetings and only 40% have their KPIs displayed on offline boards.

26%

have their KPIs displayed on big screens on the shop floor.

The Data

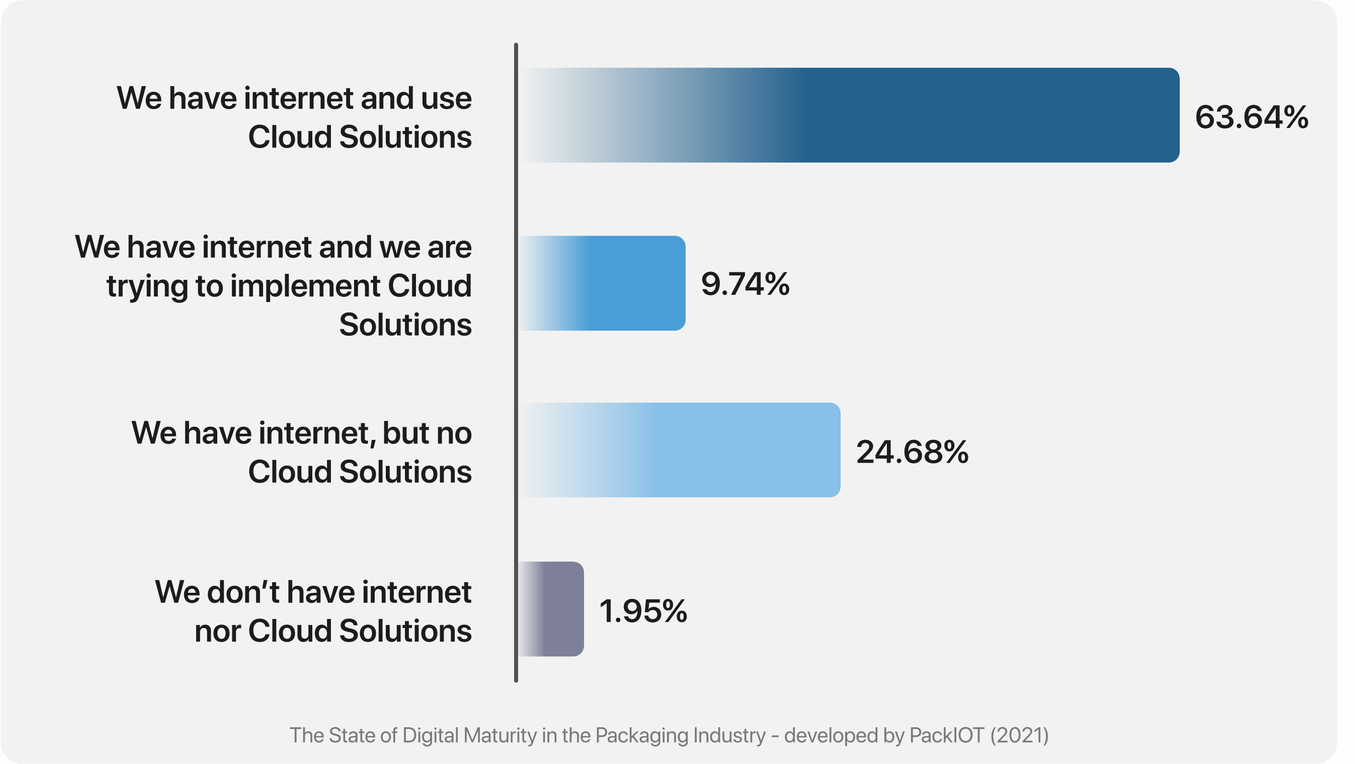
Internet Connection

Do you have internet in the factory and use cloud solutions?

More than 98% of the industries have access to Internet and the majority use a cloud solution on a daily basis.

Despite the fact that we are now living in an era where computers and automation have come together in a completely new way, more than one third of the companies have no cloud solutions at all.

Systems have evolved to be almost entirely independent through machine learning, algorithms and AI, but this is not yet a reality in the packaging industry.



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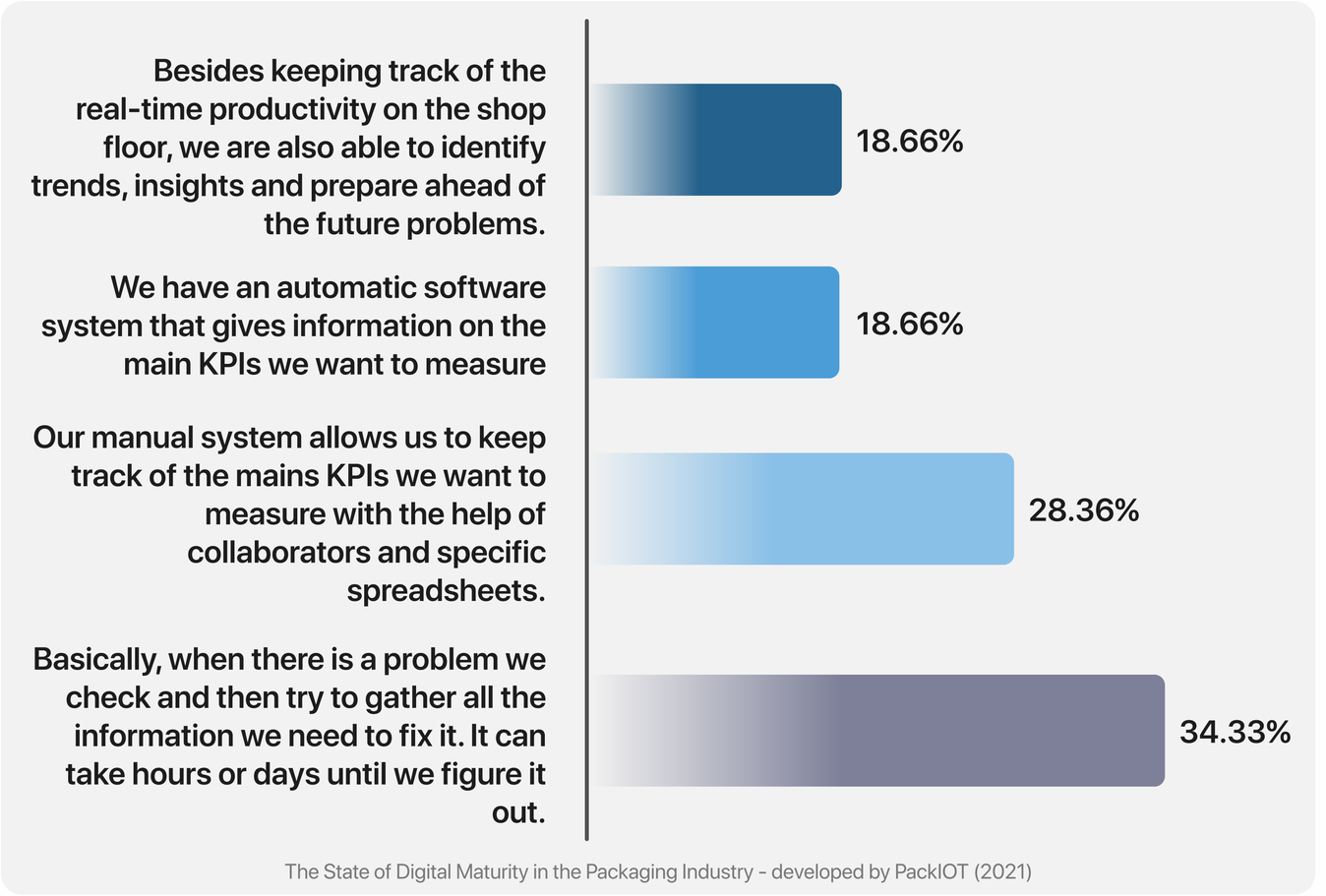
Describing your factory

Out of the scenarios below, which one best describes your factory?

Almost one third of the companies still use manual systems to identify problems or monitor their main KPIs.

Companies still waste significant amount of hours trying to gather information about the problems in the shop floor. Sometimes it is challenging to figure out how to fix those problems.

Less than 19% of the industries can keep track of real-time productivity on the shop floor and are also able to identify trends, insights and prepare ahead of future problems.



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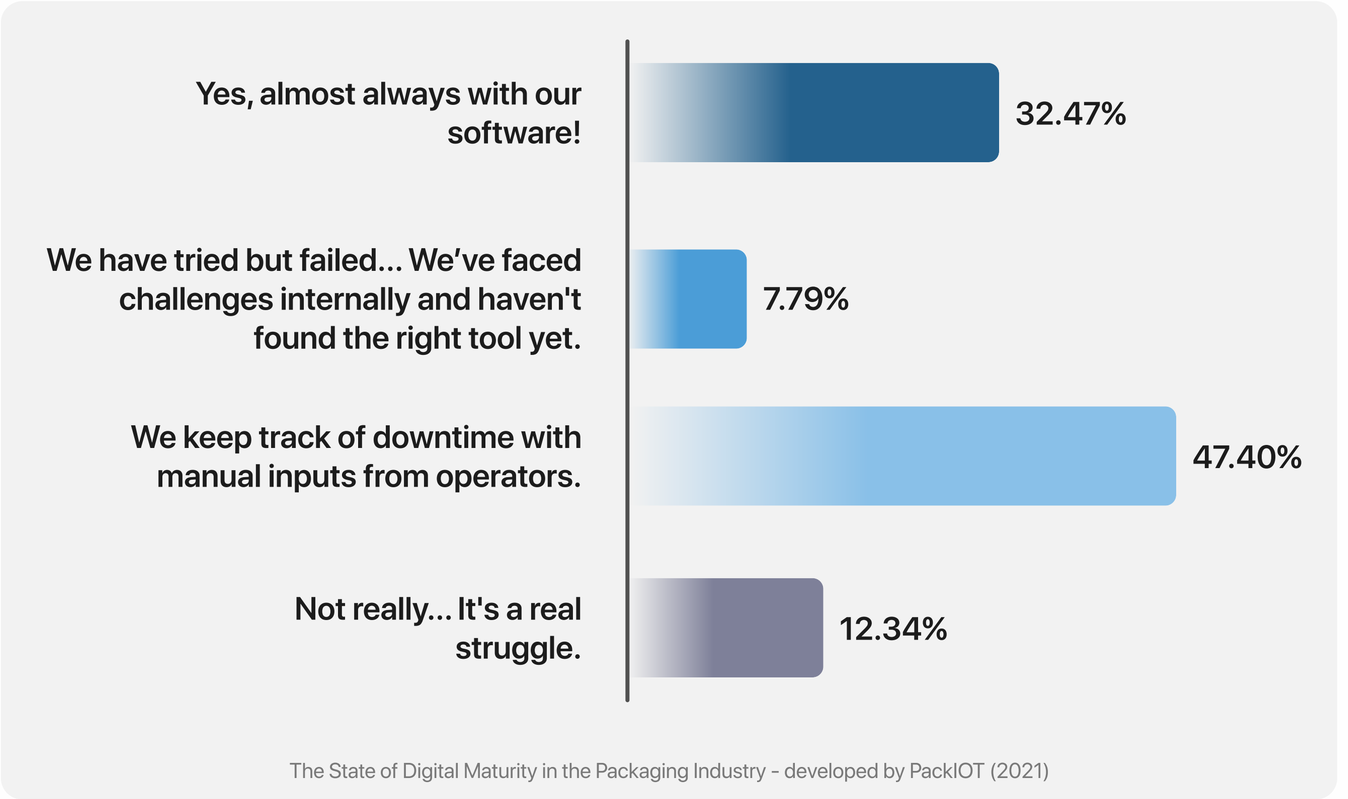
Bottlenecks and Data

Can you identify the main bottlenecks and check the right data in real-time?

More than half of the industries cannot point, in real-time, where the production line bottlenecks are.

And almost half of the companies track their equipment downtimes through manual inputs from operators.

It is very surprising that 12% of the industries struggle to identify bottlenecks and check the right data.



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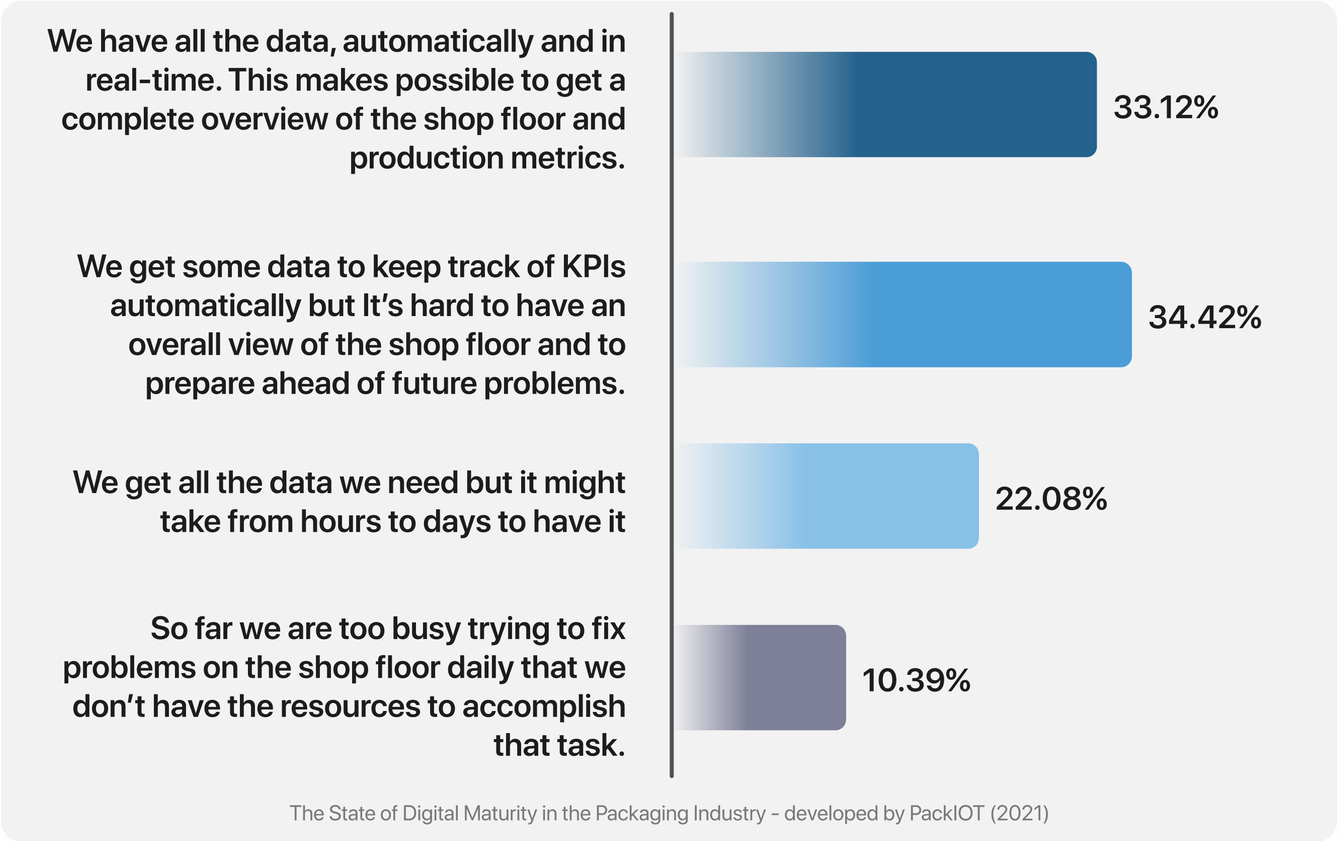
Dashboards

Do your factory's dashboards show everything you need for decision making? Are they updated automatically and regularly?

Two thirds of the industries fail to get a complete overview of the shop floor and production metrics in real time.

One out of four industries can get the data they need, but it might take from hours to days to have it.

Some companies have not yet managed to prioritize digital transformation and might take them hours or even days to have it.



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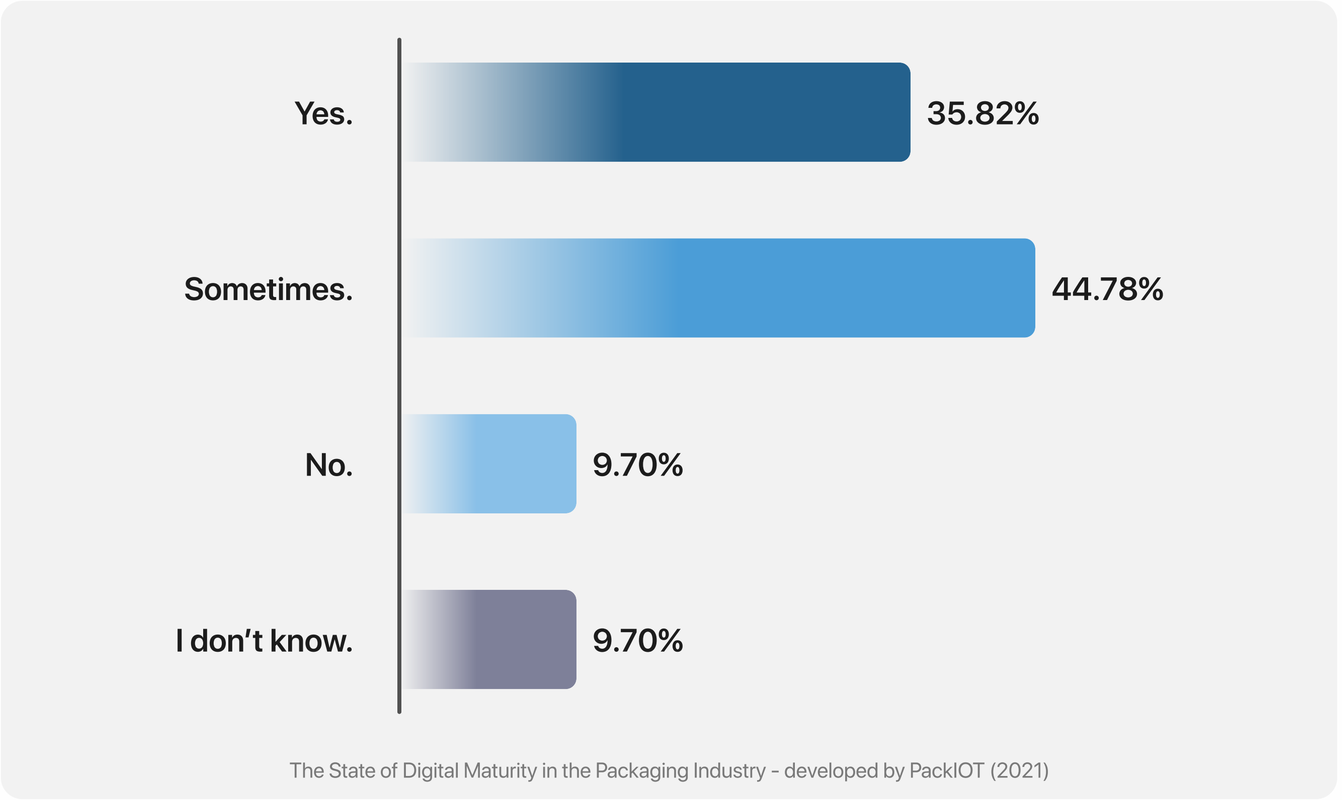
Productivity Goals and OEE

Would you say you are achieving productivity goals and keeping track of your factory's OEE?

This question is very simple and the fact that almost two out of three packaging industries struggle to keep track of their productivity goals and OEE in real time is very concerning.

In today’s highly competitive and fast-moving markets, it is essential for manufacturing companies to promote a culture of continuous improvement in the entire organization in order to become more productive and efficient.

Knowing your OEE will help you understand your machines’ availability, quality and performance.



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Data Collection and Data Analysis

Could you select the options that describes the data collection and data analysis processes in your factory?

More than half of the companies still use Excel spreadsheets to analyze data and one out of four packaging companies collect data manually.

Real-time data can help your packaging factory to have: better people management, new business opportunities at the right time, better decision making and quick response to alerts.

And despite those facts, only 17% of the companies answered that they collect data on the whole shop floor and only 29% have real-time data available.

Data Collection and Data Analysis

Could you select the options that describes the data collection and data analysis processes in your company?

- **Highly manual**
  25.37% of the factories
- **Excel spreadsheets**
  52.24% of the factories
- **We collect automatic data on the whole shop floor**
  17.91% of the factories
- **We have automatic data collection for some machines**
  32.90% of the factories
- **We analyze data when we need to**
  29.10% of the factories
- **We have real time data available**
  29.85% of the factories
- **We have automatic alerts when something goes wrong**
  15.67% of the factories
- **We have real time actionable data (insights)**
  13.43% of the factories

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Information Level

How does your company make sure that everyone is on the same level regarding what's happening internally?

Only half of the companies have pre-shift meetings to talk about production goals and three out of four respondents do not have data transparency regarding the company Key Performance Indicators.

Delivering metrics like OEE, throughput, scrap rate and downtime in real-time to the shop floor could help them boost their plant's productivity.

- **Weekly C-Level Meetings**
  49.25% of the factories
- **Pre-shift meetings**
  50% of the factories
- **KPIs display on offline boards**
  40.30% of the factories
- **Digital KPIs display on big screens**
  25.37% of the factories
- **We don't talk often about performance**
  11.94% of the factories
- **I am not sure**
  8.96% of the factories

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Tools and Systems

Which of these tools and systems does your company currently use?

Tools and systems are always helpful if they are being used correctly.

The goal of any manufacturing analytics application is always to increase capacity, productivity and throughput. Basically, what all this means is doing more with the already existing resources.

Although only 29% of the packaging companies use production analytics software, those kind of tools are very helpful to ensure better product quality, increase performance, reduce costs and optimize supply chains.

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- **ERP - Enterprise Resource Planning**
  64.18% of the factories
- **MES - Manufacturing Execution System**
  23.13% of the factories
- **Production Analytics Software**
  29.10% of the factories
- **Sensors and PLCs**
  32.09% of the factories
- **Augmented reality tools**
  5.22% of the factories
- **Virtual reality tools**
  2.24% of the factories
- **I am not sure**
  20.15% of the factories

Production Insights

Can you identify the production insights that you are able to access with the tools and systems that your company currently use?

Only half of the packaging companies can answer, using the tools and systems that they have in their factories, how their production is running in real-time.

And almost two out of three companies cannot identify: their peak production, best shifts are occurring, when their scrap rate is higher and if they are on track on planned downtimes.

Three out of four factories cannot answer how long is their changeover time and more than half do not know where is the production line bottleneck.

Production Insights

Can you identify the production insights that you are able to access with the tools and systems that your company currently use?

- **What is our production right now?**
  55.97% of the factories
- **What is our planned downtime? Are we on track?**
  35.07% of the factories
- **What is our actual OEE?**
  38.06% of the factories
- **What is our throughput?**
  28.36% of the factories
- **In which line our OEE is better?**
  35.82% of the factories
- **Where is our bottleneck?**
  41.04% of the factories
- **When is our peak in production?**
  35.82% of the factories
- **When our best shift has been occurring?**
  35.82% of the factories
- **When our average scrap rate is higher?**
  38.06% of the factories
- **How long is our changeover time?**
  27.61% of the factories
- **Other insights not mentioned**
  23.13% of the factories
- **I can't measure any of these**
  17.91% of the factories

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Insights

You need cloud based software to have a better awareness of your factory

The amount of companies that answered, in the Production Insights, that they cannot measure any of the metrics we pointed out, is higher in companies that do not have cloud solutions: 27% versus 12% of companies with cloud based software.

Companies with cloud based software have a better knowledge in important industry metrics like changeover time and scrap rate as you can see in the charts on the side.

One cannot imply that just by adding a cloud based solution you will get better results, but by adopting a cloud based software you are becoming a more digital mature company and closer to the Industry 4.0 reality, where industries get a complete overview of the shop floor through their software's metrics.

Insights

You need cloud based software to have a better awareness of your factory

Proportion of companies that know their changeover time

27% of All Companies

34% of Companies with Internet and Cloud Solutions

9% of Companies with Internet, but no Cloud Solutions

Proportion of companies that know when the scrap rate is higher

38% of All Companies

45% of Companies with Internet and Cloud Solutions

18% of Companies with Internet, but no Cloud Solutions

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Companies with a cloud based solution have a higher knowledge of their OEE

As you have seen on the **Production Insights'** slide: 38% of companies can answer what is their actual OEE and 35% of the industries know in which line their OEE is better.

When we filter those data from companies that answered that they have internet and use cloud solutions, the numbers jump to 49% and 47%.

In companies that have Internet connections, but no cloud solutions, their OEE knowledge decrease to 21% and 15%.

Companies with a cloud based solution have a higher knowledge of their OEE

Proportion of companies that know their actual OEE

38% of All Companies

49% of Companies with Internet and Cloud Solutions

21% of Companies with Internet, but no Cloud Solutions

Proportion of companies that know in which line their OEE is better?

35% of All Companies

47% of Companies with Internet and Cloud Solutions

15% of Companies with Internet, but no Cloud Solutions

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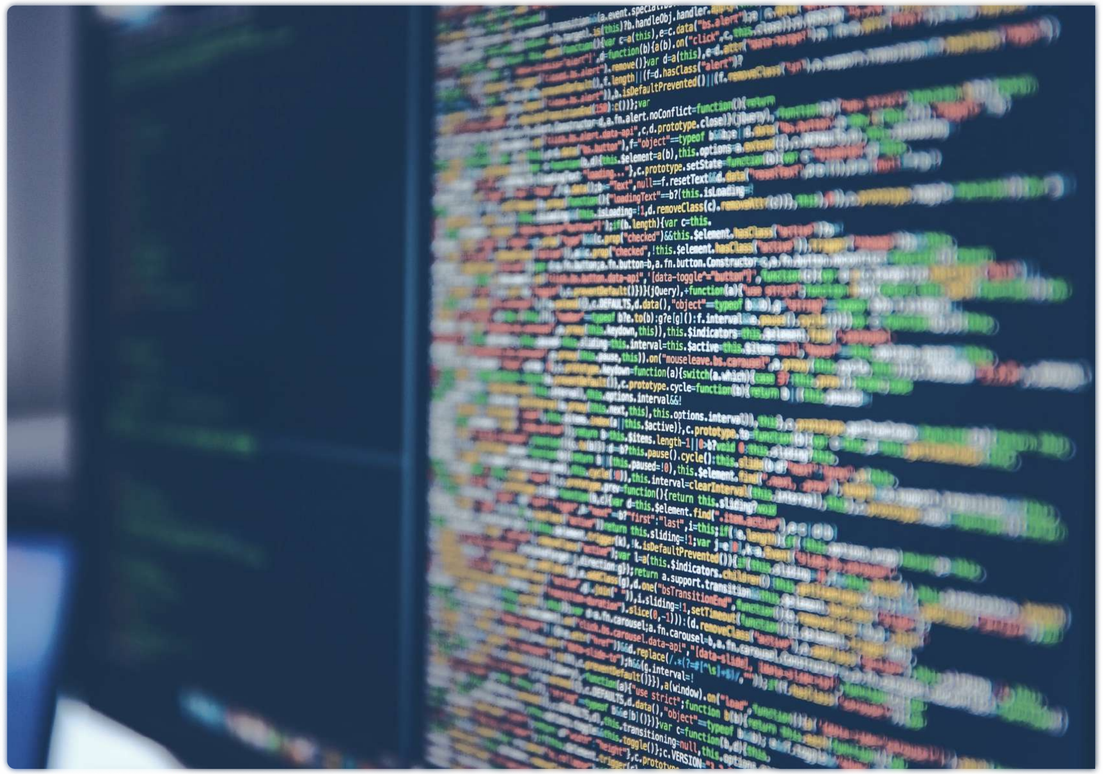
Manual data collection rates in companies without cloud solutions is more than four times higher than in companies with cloud solutions

As you have seen on the slide with the **Data Collection and Data Analysis**: 29% of companies have real-time data available.

But 41% of the companies with cloud solutions have real-time data. And only 9% of the companies without cloud solutions have access to real-time data.

Although we are living in the Fourth Industrial Revolution, 25% of the companies still have a manual process of data collection.

But among the industries that use cloud solutions, this number decreases to half. Only 12% still collect data from manual inputs. And more than 52% of the companies with no cloud based software are gathering data from manual inputs.



Manual data collection rates in companies without cloud solutions is more than four times higher that in companies with cloud solutions

Proportion of companies that have real-time data available

29% of All Industries

41% of Industries with Internet and Cloud Solutions

9% of Industries with Internet, but no Cloud Solutions

Proportion of companies that have 'highly manual' data collection

25% of All Industries

12% of Industries with Internet and Cloud Solutions

52% of Industries with Internet, but no Cloud Solutions

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Companies with a very low digital maturity level do not have good numbers on data collection, data transparency, metrics and key performance indicators

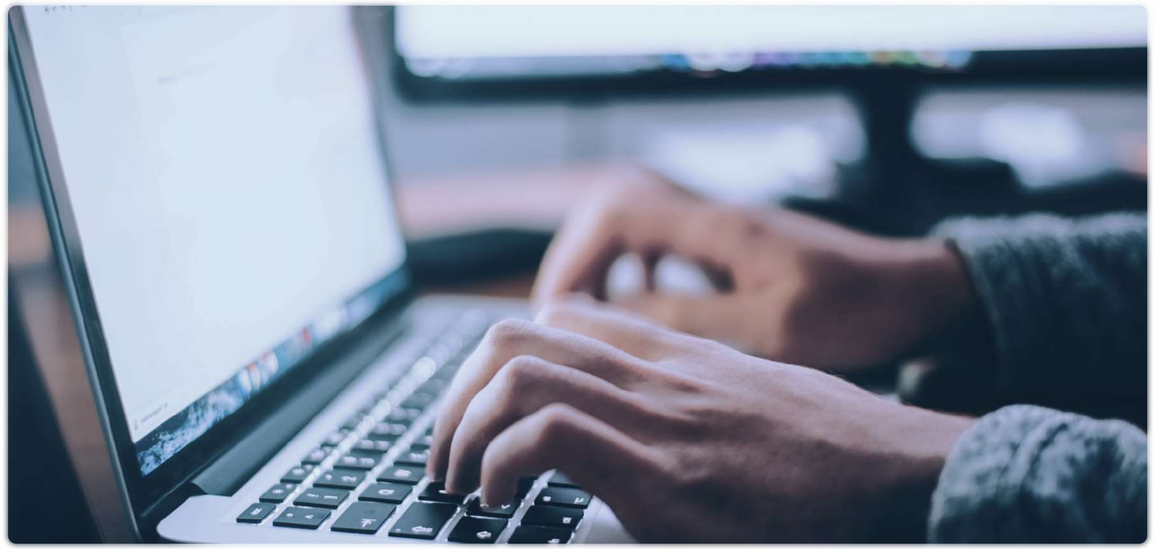
One out of three companies described themselves as:
‘Basically, when there is a problem we check and then try to gather all the information we need to fix it. It can take hours or days until we figure it out!’

Among those companies

78% use excel spreadsheets for data collection

98% do not collect data from the whole shop floor

83% cannot answer what is their actual OEE



80% do not know when is their peak in production

85% do not know their changeover time

But even companies with a high level of digital maturity and data collection do not gather or use their data properly

One out of three companies described their data collection system as: **‘We have all the data, automatically and in real-time. This makes possible to get a complete overview of the shop floor and production metrics.’**

Among those companies

21% use excel spreadsheets for data collection

57% have a production analytics software

45% cannot answer what is their OEE on real-time

48% do not know when is their peak in production

5% do not talk about performance

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But even companies with a high level of digital maturity and data collection do not gather or use their data properly

35% of the industries answered that they are: **‘Achieving productivity goals and keeping track of the factory’s OEE’**

Among those companies

42% use excel spreadsheets for data collection

46% have a production analytics software

44% cannot answer what is their OEE on real-time

44% do not know when is their peak in production

8% do not talk about performance

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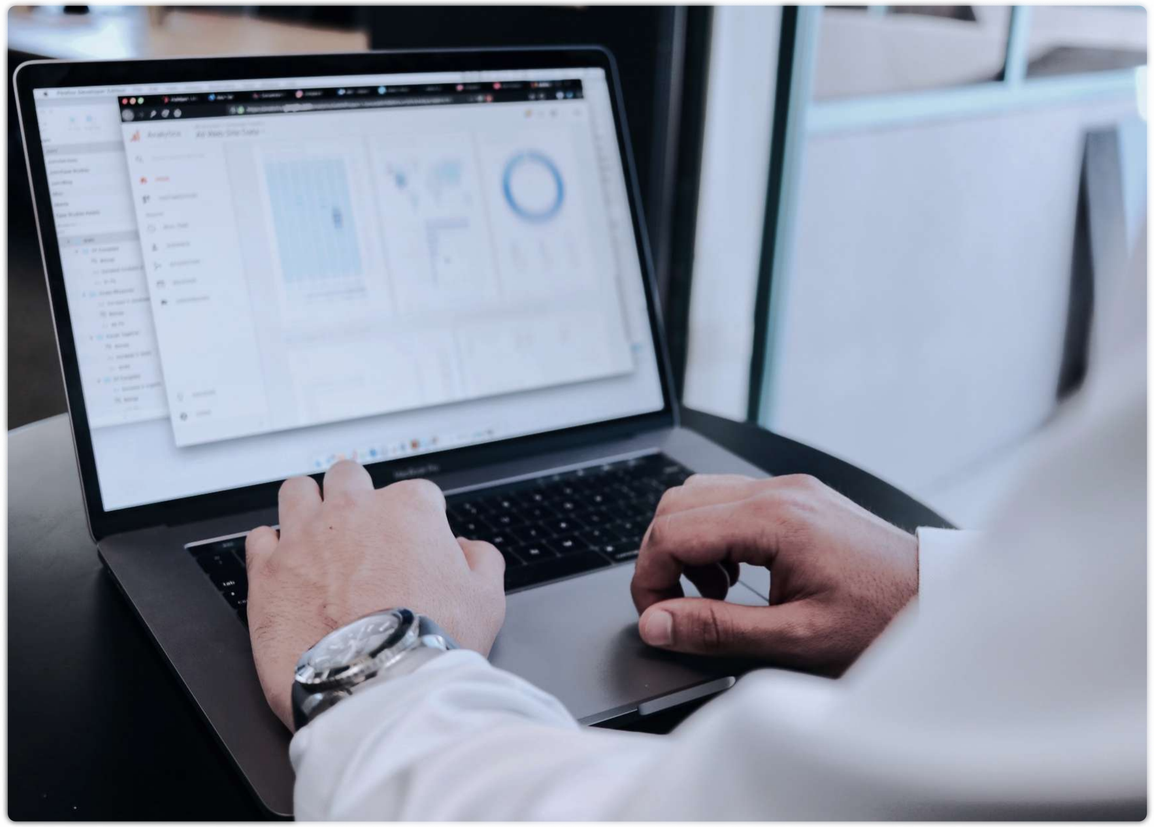
Companies with a Production Analytics Software have the best numbers

29% of the companies answered that they have a Production Analytics Software running in their industry. Check their numbers on the side:



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Among those companies

Only 7% is still using manual inputs for data collection

59% have their production data available in real-time

77% can answer how their production is running in real-time

57% know if they are on track on planned downtimes

92% can answer if they are achieving productivity goals

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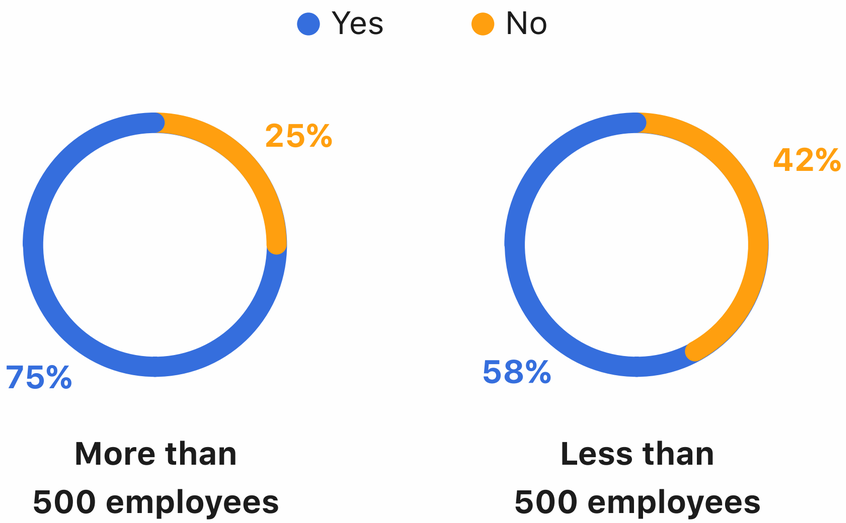
Compare your plant to others based on the number of employees

“We have Internet connection and use cloud solutions”



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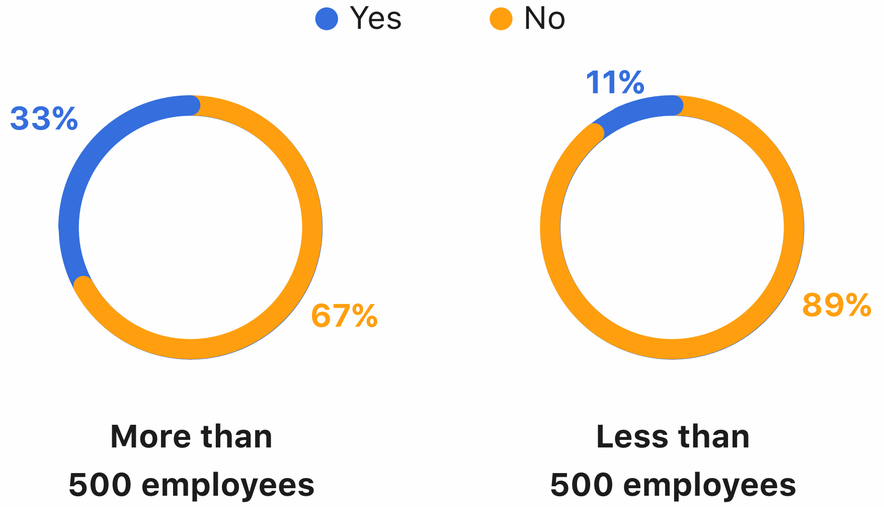
“Besides keeping track of the real-time productivity on the shop floor, we are also able to identify trends, insights and prepare ahead of future problems”



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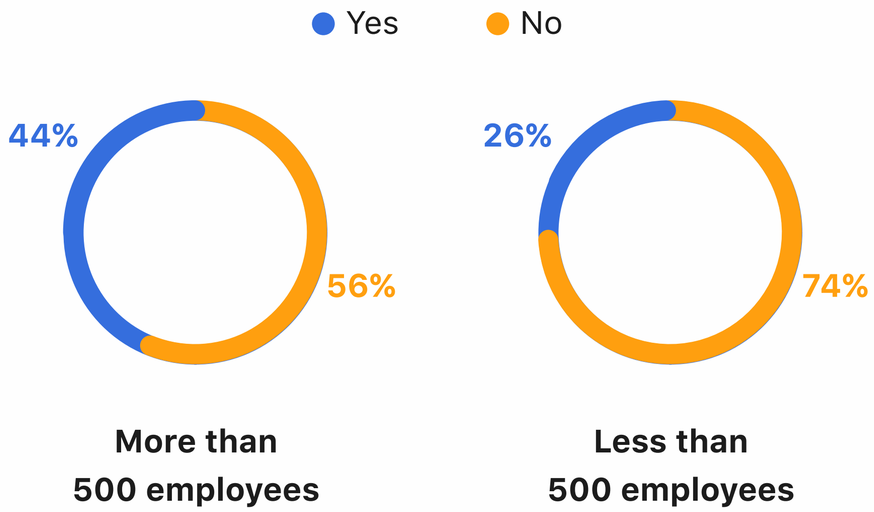
Compare your plant to others based on the number of employees

“We have all the data, automatically and in real-time. This makes possible to get a complete overview of the shop floor and production metrics.”



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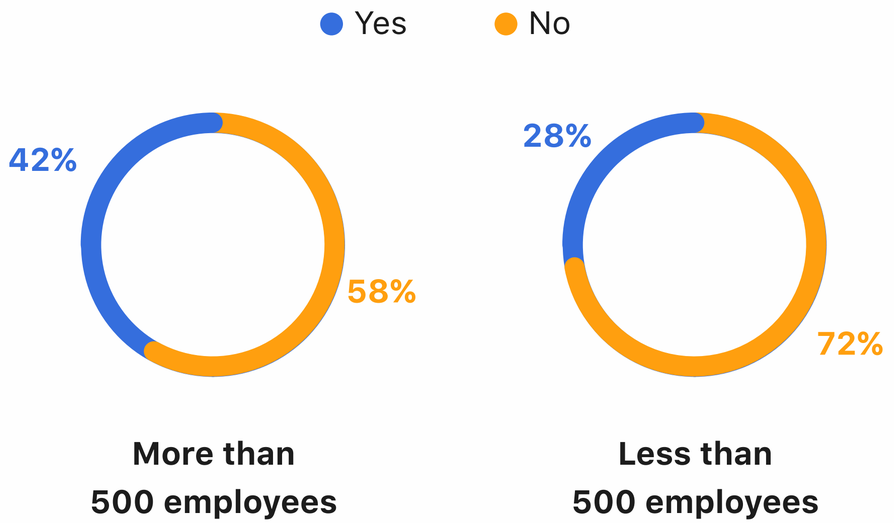
“We identify bottlenecks and check data in real-time with our software”



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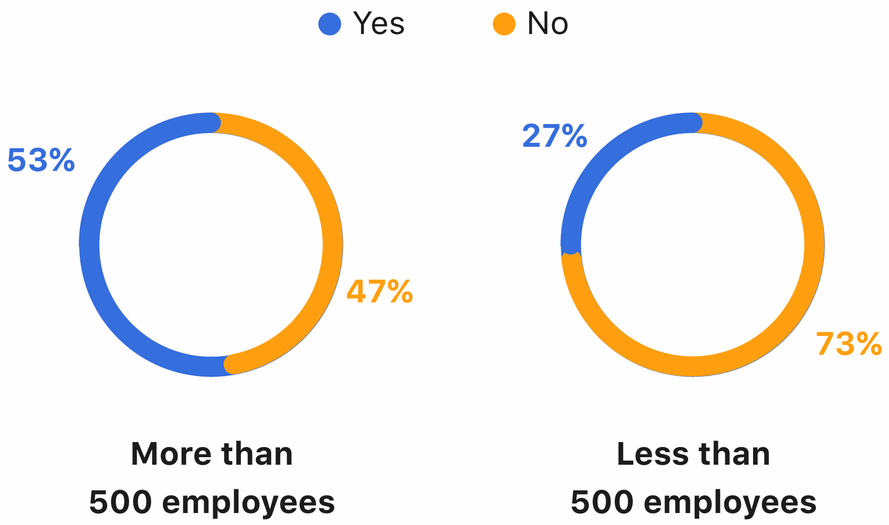
Compare your plant to others based on the number of employees

"I can point out in which line our OEE is better"



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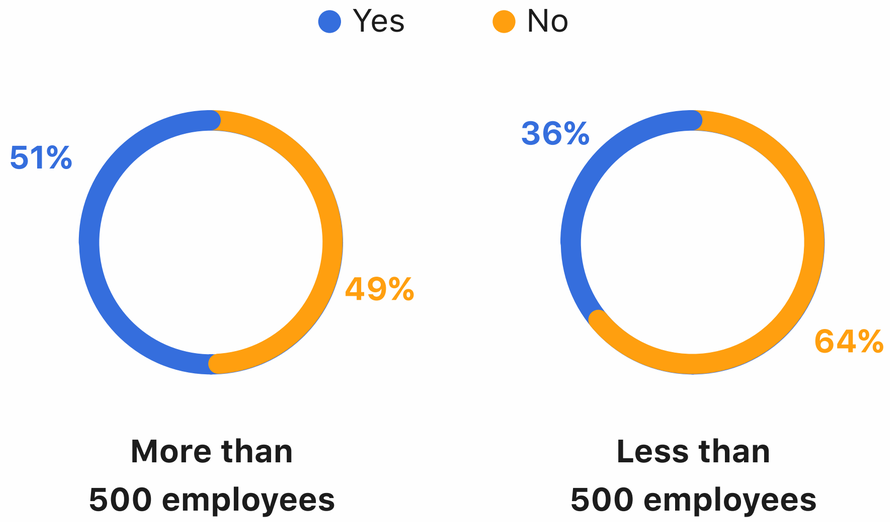
"I can identify where is our bottleneck"



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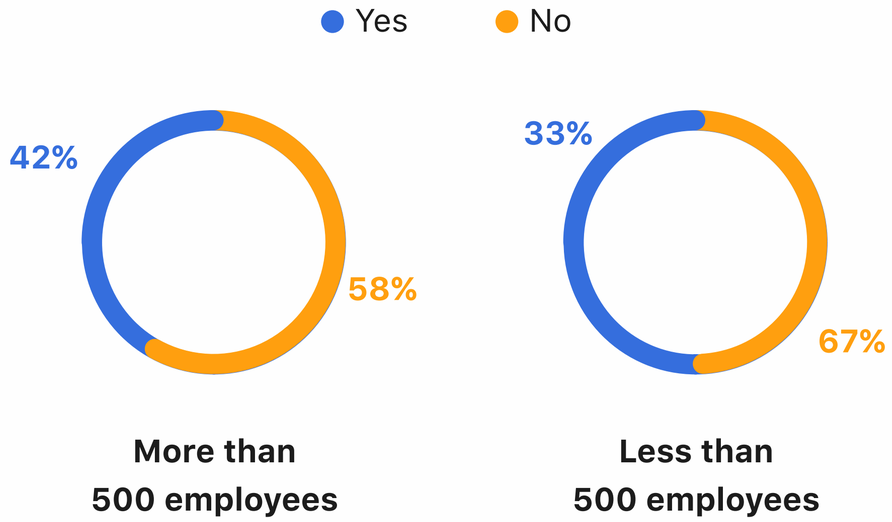
Compare your plant to others based on the number of employees

“I know when our best shift is occurring”



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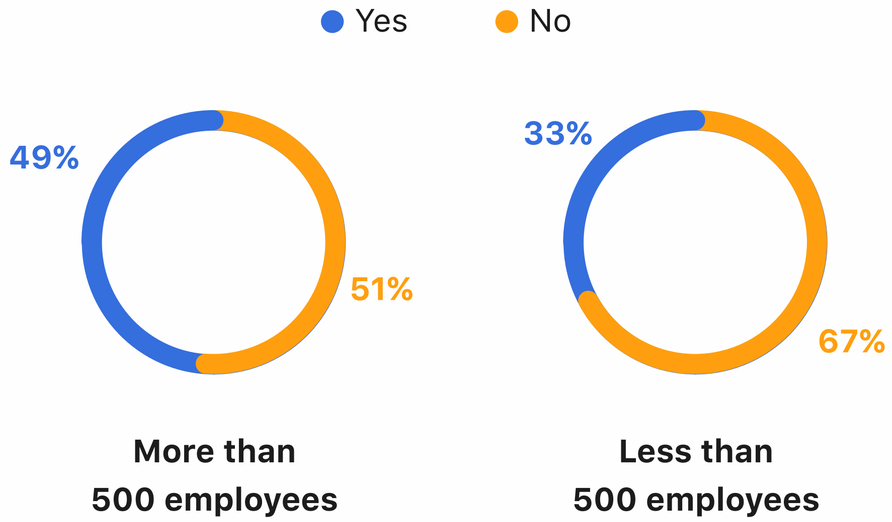
“I can answer when our scrap rate is higher”



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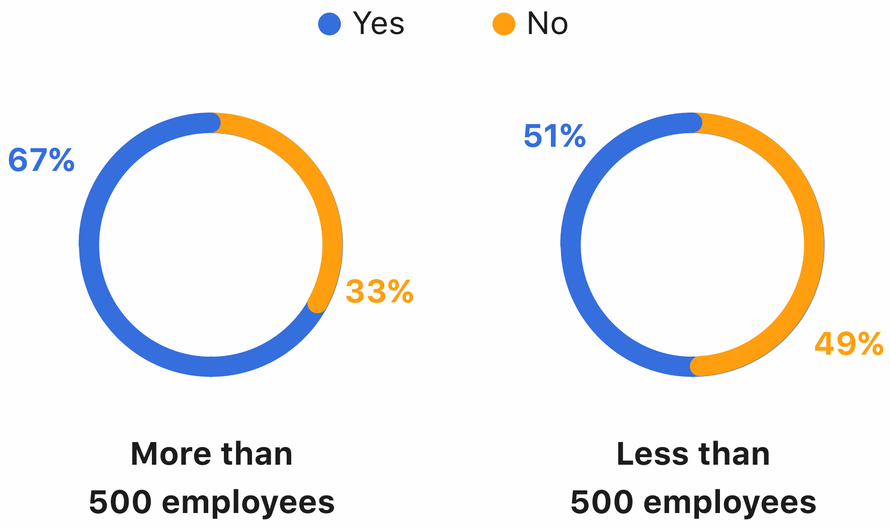
Compare your plant to others based on the number of employees

“I know how our production is running in real-time”



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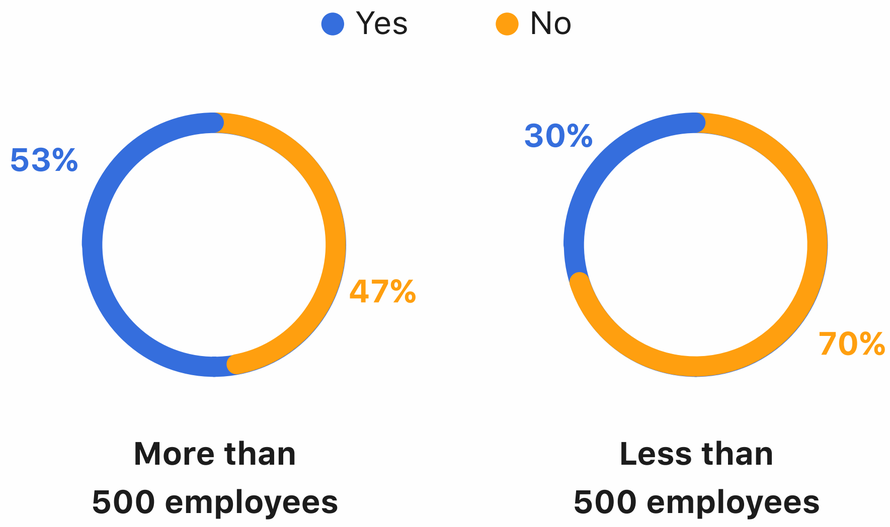
“I can answer what is our actual OEE in real-time”



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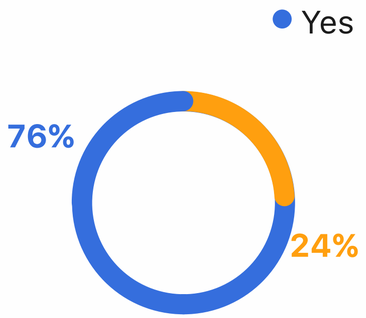
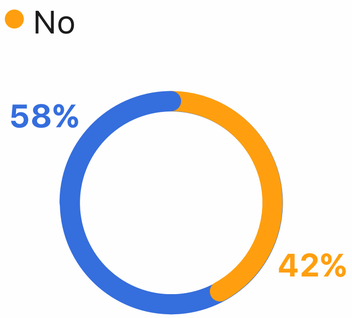
Compare your plant to others based on the number of employees

Tools that the companies use

ERP

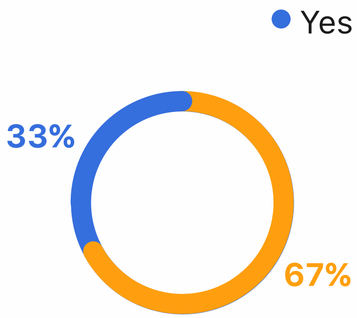


More than 500 employees

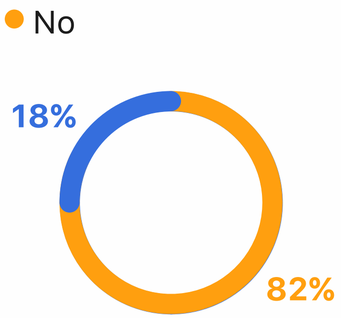


Less than 500 employees

MES

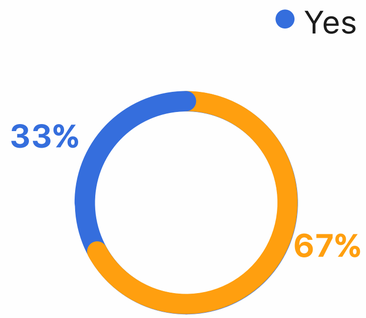


More than 500 employees

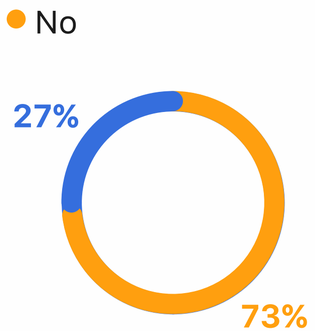


Less than 500 employees

Production Analytics Software



More than 500 employees



Less than 500 employees

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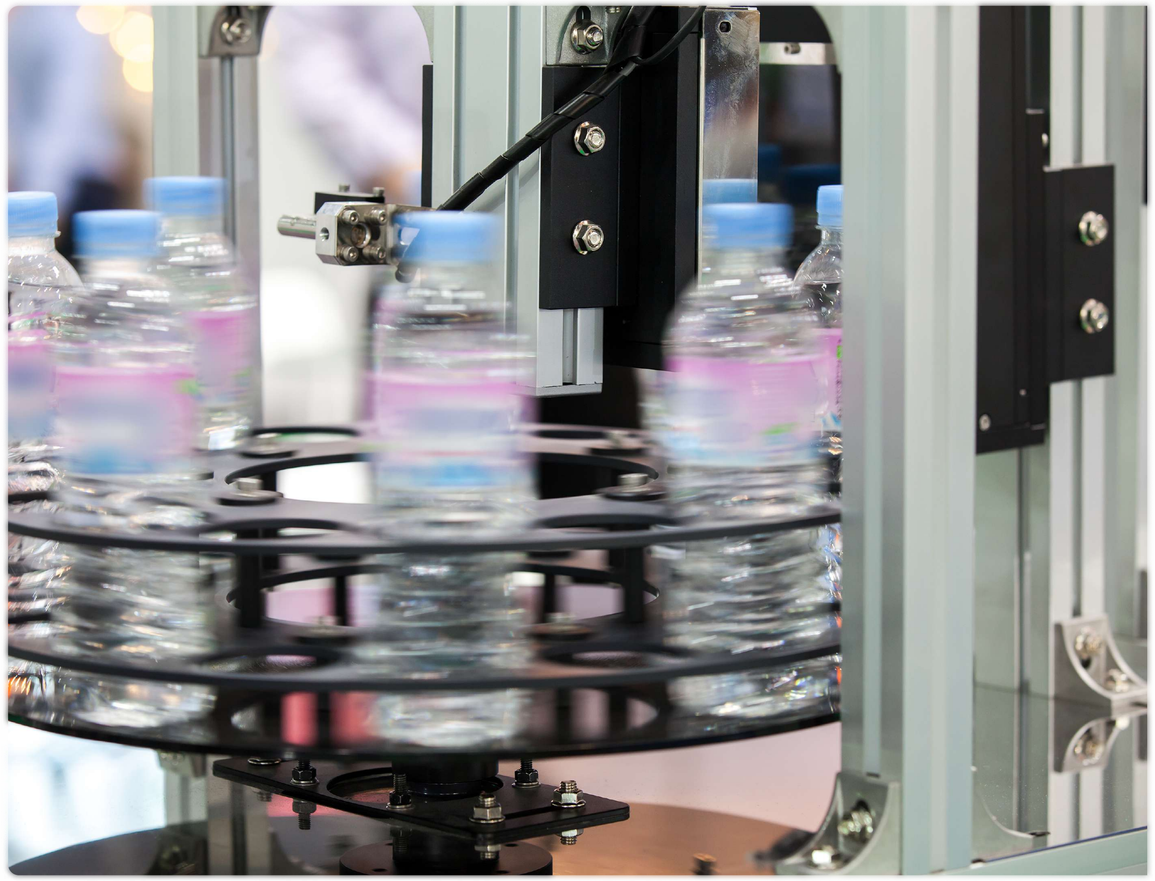
Conclusion

A deeper dive into the survey findings identifies a lot of room for improvement in the Packaging Industry. Companies struggle to identify bottlenecks and to keep track of their OEE. Goals are not openly discussed and few plants know if they are on track on planned downtimes.

One out of three companies described that they have access to all the data, automatically and in real-time with a complete overview of the shop floor and production metrics. We would say that this is the level of a mature company. But even those industries are failing to use their data properly, since 48% of them cannot answer when their peak at their production happens.

The Packaging Industry needs to innovate, and to innovate it needs reliable data, data that is accessible to anyone and that can be easily transformed into intelligence.

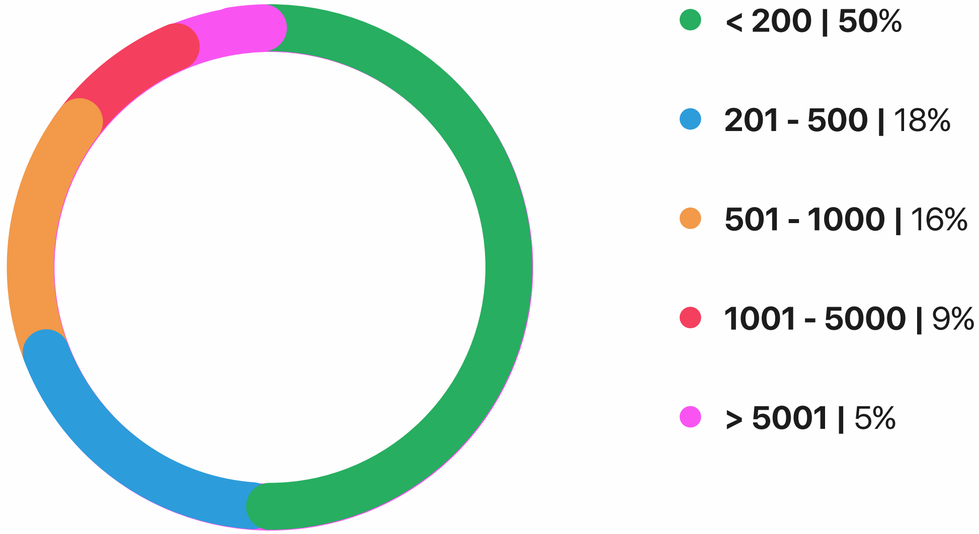
“Data is not the answer. Data is the question.”



About the survey

Through the second quarter of 2021, PackIOT developed this survey with packaging industries from all over the world, with respondents from **five different continents and 28 countries**: Brazil, Canada, Colombia, Cyprus, Czechia, Denmark, Estonia, Greece, Hungary, India, Ireland, Israel, Lithuania, Mexico, Netherlands, Norway, Pakistan, Poland, Portugal, Romania, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

Size



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At PackIOT we are committed to build a great user-centric software to: generate for everyone in our client's company; support the industry to make data-driven decisions based on information they can trust; and help the industry workers to see the value of their contributions, to feel more part of the solution and to have more ownership.