

THE USE OF SPREADSHEETS IN COMMODITY TRADING – 2015

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About Commodity Technology Advisory LLC

About Generation 10 Ltd.

Executive Summary

Spreadsheets have long been an integral part of a trading company's armory of tools and software. Over the years, the demise of the spreadsheet in commodity trading organizations has continued to be predicted with increasing frequency and regularity, and yet, the spreadsheet is alive, well, and kicking in 2015; as this survey proves. Despite the growing maturity of commercially available Commodity Trading and Risk Management software (CTRM) solutions, the increase in regulation and oversight and, the alarming number of horror stories involving spreadsheets in losses, mistakes and fraud, they seem difficult to eliminate. This survey, prompted by current round of regulation and controls, revisits the spreadsheet in commodity trading to discover how widespread and pervasive they are and why.

The survey was conducted as an electronic questionnaire promoted via Commodity Technology newsletter and other email lists as well as on social media and the CTRMCenter website. It received 133 responses between early November and mid-December, 2014, which after eliminating incomplete responses or those submitted anonymously, was reduced to a set of 50 valid responses from identifiable participants. The distribution of the valid responses was primarily from Europe and North America and from across the entire commodity trading sector.

The survey found that spreadsheets are widely used in commodity trading firms, especially in business functions that can be considered less mature in terms of commercial software offerings such as risk management, operations planning, origination and scheduling, where between a quarter and a third of all respondents claimed to use them extensively. It appears that the spreadsheet is simply too convenient and easy to use at a low cost to eliminate entirely. The most given reason for using spreadsheets was that it is simply faster and easier to do so. On the other hand, the lack of an audit trail, regulatory issues and risk of error were amongst the most widely cited disadvantages.

Incredibly, almost all of the respondents were concerned to some degree about the use of spreadsheets at their firm.

More than 40% of the respondents said that they were very concerned and almost 7 out of 10 respondents said that they knew of a horror story involving spreadsheets. Many of the respondents provided examples of horror stories that included cut and paste errors, lack of version control, sorting errors and integration issues.

The survey also asked about the applications utilized in the business and about satisfaction levels finding a wide variety of commercial applications being used and that most users were 'satisfied' with their solutions. However, when asked if their solution had effectively eliminated spreadsheets, only a minority could report that as the case. More than half claimed to still utilize spreadsheets extensively.

This study makes for sobering and thought provoking reading. While the respondents understand the vast range of potential for issues with spreadsheets, they also find their ease of use and convenience compelling, and that they are very hard to eliminate even when bringing in commercial software. The risk posed by this situation has always been there but with the greater regulatory oversight and focus on the sector generally, the magnitude of the issue is increasing.

ComTech's view is that spreadsheets as tools have a role. That role is one that should be governed via well reasoned and thought through risk management policies and it should be limited to none mission critical areas of the business as much as is feasible. It is difficult, if not downright impossible, to eliminate spreadsheets from the commodity trading and risk management environment, but there is a lot more that can be done to minimize the risks involved in their use.

Introduction

The use of spreadsheets within the commodity trading and commodity management business functions and organizations is considered, at least anecdotally, to be almost ubiquitous. Despite the widespread understanding of the many and varied risks associated with the use of these unsecure and isolated pools of data and analysis, the use of spreadsheets by personnel across most functions within commodity trading and management firms remains very common and widespread. This continues, despite a number of highly publicized incidents within the commodity and financial trading sectors in which the use of erroneous spreadsheet data has been directly tied to large financial losses.

With the emergence and maturing of vendor-supplied commercially available CTRM and ERP systems, many in the industry believed that spreadsheets would become unnecessary, as these sophisticated and comprehensive systems could provide the necessary capabilities to eliminate their use in areas such as position management, trade capture, risk analysis and accounting. Despite that early promise however, and for a number of reasons (mostly tied to sheer convenience), that hoped for outcome has not yet come to fruition.

More recently, the intensifying regulatory oversight of commodity markets and traders has placed more emphasis on adequate controls, audit trails, record keeping and improved risk management practices. Against a backdrop of new regulatory initiatives, such as Dodd Frank, EMIR, MiFiD2 and REMIT, the widespread use of spreadsheets seems even more risky than before. Will the increasing burden of regulatory oversight and controls finally sound the death knell for spreadsheets and other convenient, homegrown solutions? According to regulatory expert, Mr. Aviv Handler of ETR Advisory, “A constant stream of new

and evolving regulations means that greater flexibility is needed in market participants’ systems, which will also need to cater for the rules. If the use of spreadsheets is to be minimized, flexible systems, supplied by vendors who are committed to compliance, will be the best ones to choose and keep.”

In this research effort by Commodity Technology Advisory (ComTech), and with support from project sponsor Generation 10, our goals were to first quantify how widespread the use of spreadsheets was across commodity trading and management space. We then wanted to understand in which business functions and/or operational groups were spreadsheets most commonly used. Finally, we also wanted to investigate the reasons for their continued use, and ultimately, the issues and disadvantages associated with their use. In the process of gathering our data, we asked the respondents about horror stories that they were aware of involving the use of spreadsheets and unsurprisingly, many such stories were forthcoming.

Given the well-known issues with spreadsheet use in trading environments, and now combined with intensifying regulatory exposures, why do spreadsheets remain such a resilient tool in the commodity trading and risk management industry? This research perhaps provides some answers.

SUMMARY OF RESULTS

Survey and Responses

The survey was conducted via an on-line questionnaire and was available to potential respondents between 9/11/2014 and 14/12/2014. ComTech used a variety of methods to solicit responses, including

- / Email requests to a variety of internal ComTech distribution lists including our newsletter subscribers and a number of agricultural trading and other lists acquired specifically for the purpose,
- / Requests posted on CTRMCenter,
- / Requests posted on various social media sites such as LinkedIn.com and others.

Additionally, a small incentive was also offered to all qualified respondents in order to encourage a greater participation level in the survey. In the end, a total of 133 responses were collected however, only 50 (38%) of these were accompanied

by a valid email address and other identifying data.

Given that we offered an incentive, and that in order to qualify for the incentive, a valid email address was required, this low number of readily identifiable respondents was surprising and was, in of itself, an interesting statistic. Of the 133 total responses, some 38 (29%) were incompletely answered and were therefore also discarded from further analysis.

As a result, two datasets were used to perform this analysis. The first is the core database of 50 valid and identifiable responses; and for much of the report, this is the dataset that was utilized. However, the broader dataset of 95 responses was also referenced when it was felt that the non-identified responses might add to, or clarify, the overall results. At all times in our analysis below, we identify when this occurs.

Commodity Supply Chain Data Management Solutions

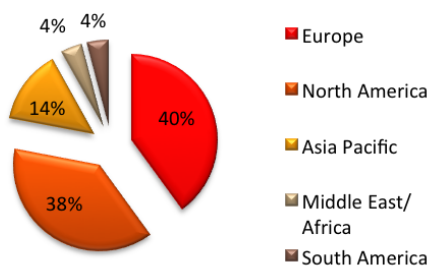
Reliable Data Collection and Processing from Origin to Dashboard



Demographics

The 50 respondents were located all around the globe with the majority being located in Europe and North America, with a sizable group participating from the Asia-Pacific region (Figure 1).

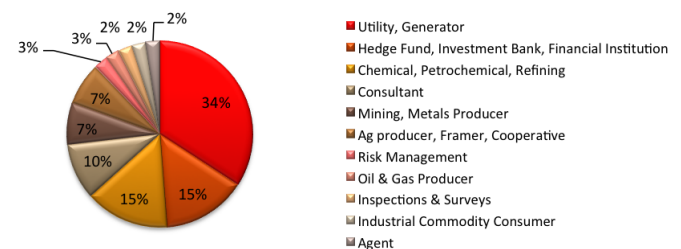
Figure 1 | Geographic Distribution of Responses



The types of companies responding to the survey represented a balanced distribution of the various types of entities involved in global commodity trading (Figure 2). Around

a third of respondents were from a utility or generator; but, hedge funds, financial institutions, chemical and petrochemical companies, consultants, metals and mining and ags and softs were also quite well represented. We do believe that this cross-section is an appropriate distribution and well reflects the types of entities involved in commodity trading and commodity management globally.

Figure 2 | Types of Entities Represented

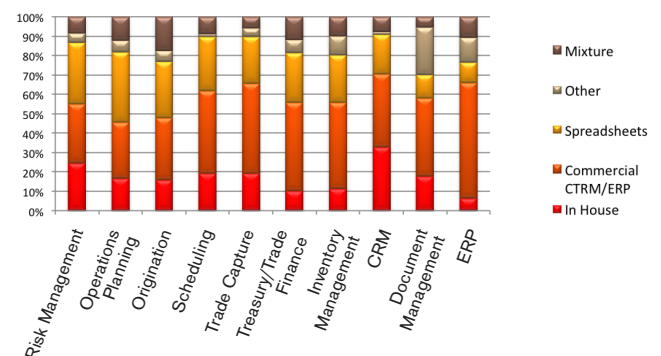


Findings

The first question asked of the respondents was designed to establish what types of solutions were deployed and used to support a number of broad functional/application areas within their company. The results (Figure 3) show that commercially available vendor-provided solutions were used most often in the ERP, Document Management, CRM, and Inventory Management areas, and least used in Risk Management, Operations Planning, and Origination. However, commercial solutions were also widely used and in each of the functional areas, ranging from 25% in Operations Planning, up to 60% in Enterprise Resource Planning (ERP). Custom-built solutions also appear to be reasonably important in the CRM and Risk Management areas, and are not so important in other application areas and business functions. Plainly, the markets tested by the survey can be said to represent a fairly mature ones as commercial solutions available from vendors are the type most often deployed in almost all areas.

However, spreadsheets are more or less ubiquitous too. In every application area tested, at least 10% of the respon-

Figure 3 | Types of Solution Used Across Business Functions/Application Areas



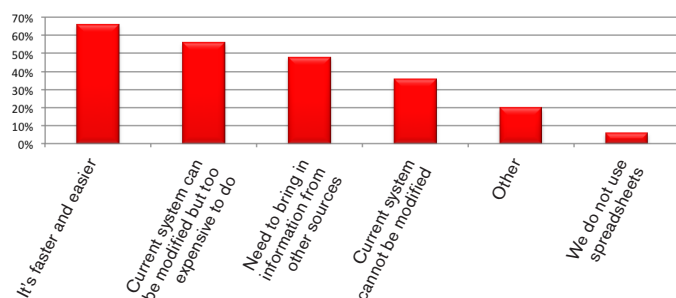
dents reported using spreadsheets as their solution or, as a part of a mixed solution landscape. According to our respondents, spreadsheets are an important component in risk management, operations planning, origination, and scheduling (between 25% and 35% of all respondents), but less important in very mature application areas such as ERP, and non-an-

alytical functions such as document management (around 10% of respondents). In fact, the same graph above could also be used as a proxy for maturity of commercial solutions in each functional area.

Despite the fact that most of these application areas and business functions are fairly mature in terms of the use of commercially available software applications, the data suggests that many companies still rely on spreadsheets as an important supplemental component of their trading systems landscape. So, do spreadsheets continue to be used so extensively by these individuals and their companies?

We offered the respondents a variety of reasons to choose from as to why they might use spreadsheets and we asked them to indicate which they believed were the most important (Figure 4). The results suggest that by far the biggest factor is simply convenience - it is easier and faster to use a spreadsheet. The second most important reason was that while they believed their current application could be modified to provide certain functionality, it was deemed too expensive to do so and a spreadsheet (easier, cheaper and faster) was used instead. Another important reason was the need to bring in data or information from other sources (lack of integration). Only 6% of the respondents indicated they did not utilize spreadsheets at all. Overall, the results show that spreadsheets are seen as more convenient (easier and faster to use) and cheaper to use than the available alternatives.

Figure 4 | Ranked Reasons to Use Spreadsheets

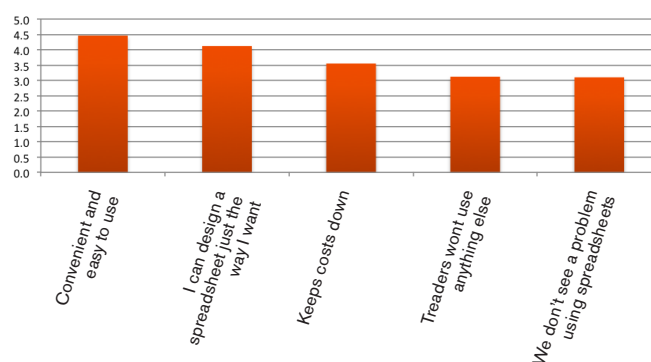


We then asked the respondents what they perceived as being the benefits of using spreadsheets. They were asked to rank the listed benefits on a scale of 1 to 5, with 5 being “very important” and 1 being “not important at all”. Given the widespread use of spreadsheets, it's perhaps not surprising that

none of the benefits ranked lower than “average” and most were most often noted as “important” and “very important”.

As a group, the respondents indicated they felt the most important benefit was the sheer convenience and ease of use of spreadsheets again, followed by the ability to design a spreadsheet exactly how they wanted to (again - convenience and ease of use). The idea that there is a strong trader's preferences for spreadsheets was also judged to be a factor, while the belief that there was no problem using spreadsheets ranked last at “average”. The lower cost of spreadsheets versus the alternatives was also viewed as having above average importance (Figure 5).

Figure 5 | Ranking of Spreadsheet Benefits



On the other side of the coin, we asked the respondents to rank their views of the potential disadvantages of using spreadsheets. Again, all of the potential disadvantages were ranked as ‘average’ or above, with the lack of an audit trail and concerns regarding errors being ranked as the greatest concerns; followed closely by regulatory and governance issues, and lack of control. Difficulty in testing, lack of concurrent access, report generation and visibility to upper management were the least concerning disadvantages (Figure 6).

When we asked the ‘big’ question directly regarding their level of concern over using spreadsheets at their own company, the results were very clear. A vast majority (90% of all respondents) are concerned to some degree about the use of spreadsheets at their company, with over 40% indicating they were very concerned. (Figure 7).

Figure 6 | Disadvantages of Spreadsheets

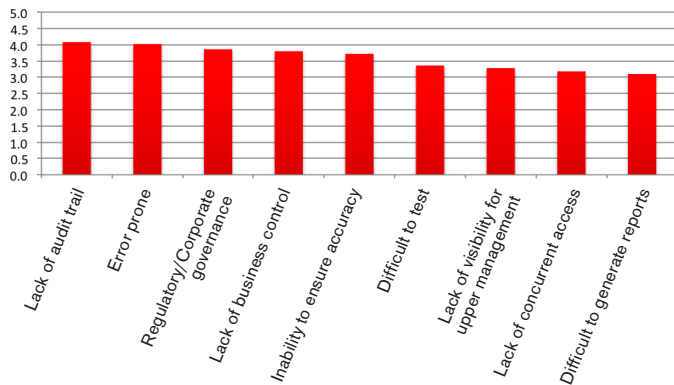
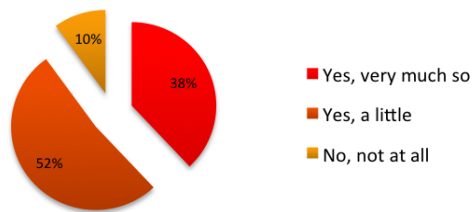


Figure 7 | Concerned Over Spreadsheet Use?



When asked if the respondent was aware of a spreadsheet “horror story”, some 68% of the respondents indicated that they knew of at least one incident where the use of a spreadsheet had created operational or financial issues. Some of the respondents (we used both data sets here) related their own bad experiences of using spreadsheets. These stories are very telling and offer much food for thought when reviewing the use of spreadsheets in your own organizations:

- / A \$2 million trading error was traced to the replacement of a cell formula with a fixed value,
- / Numbers were transposed on data entry into a master spreadsheet and downstream spreadsheets had no visibility of that error in the master spreadsheet,

- / An added row or column didn't get included in the calculations,
- / Lack of audit controls including time stamp and approvals for the trade ticket,
- / Different Versions of the same Spreadsheet being used simultaneously and no one knew until too late,
- / A bug in VBA code, written internally, led to huge losses,
- / The spreadsheet needed to be tweaked every month-end but when the owner of the spreadsheet was on holiday, reporting had to be suspended - major headache,
- / Incorrect positions as a result of missing certain cells on the spreadsheet,
- / An attempt to sort a column resulted in wrong values and no one noticed. The downstream spreadsheets were all impacted too,
- / Copy and paste errors where formulas got copied rather than numerical values and all the results were wrong,
- / Incorrect position data as some cells were omitted in the final calculation,
- / Very common to find errors in trader spreadsheets being used to determine P&L. Traders will almost always put in some level of “Mark to Intent” numbers in the sheets to support larger bonuses than would be granted using Risk System numbers,
- / Spreadsheet pulling in incomplete data resulting in risk mismanagement errors.

The potential magnitude of the issues related above should be very sobering for any company, and should certainly be enough to either move toward banning the use of spreadsheets in a trading business context or, at least, ensure that very strong controls are put into place if they must continue to be used. Unfortunately, none of the issues noted are necessarily surprising, as they run the gamut of the very types of issues and problems one would expect given the nature of spreadsheets.

Collaboration

Process & Metrics

Analytics

Commodity Supply Chain Data Management Solutions

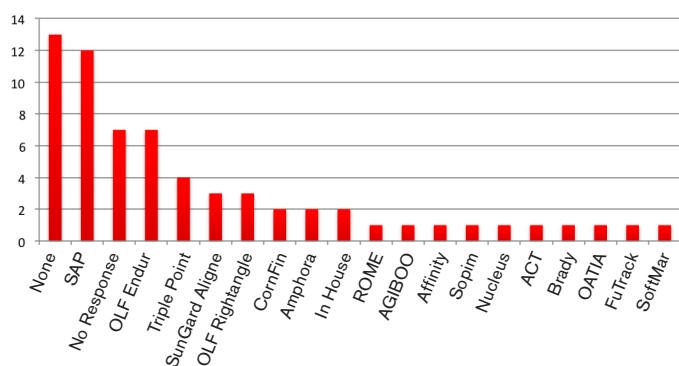
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Systems in Use

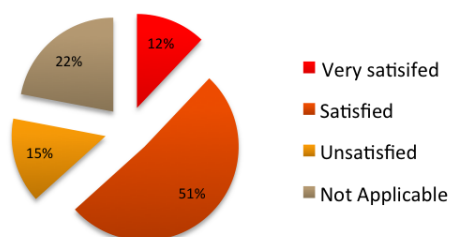
In order to provide additional context to our research, we asked the respondents to identify which CTRM or ERP system they currently used. Quite a number stated that either they didn't such system or, in some instances, did not wish to respond to the question. Of those who did provide an answer, SAP was the most commonly used system, presumably deployed as an ERP solution. OLF Endur, Triple Point, SunGard Aligner and OLF RightAngle were the most widely used CTRM solutions, but a number of different CTRM and ERP solutions were also identified by the respondents (Figure 8 below).

Figure 8 | ERP and CTRM Solutions Use



In terms of user satisfaction with these solutions, a majority of the respondents indicated they were satisfied with their installed products, with about half noting they were “Satisfied” and a further 12% stating they were “Very Satisfied”. About 15% of respondents noted that they were “Unsatisfied”. The overall distribution is very slightly skewed towards unsatisfied a result that is entirely in line with several years of polling data

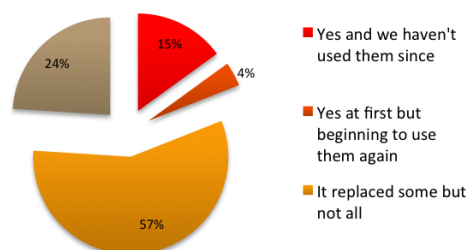
Figure 9 | Satisfaction Ratings



by CommodityPoint and Commodity Technology Advisory in the ETRM and CTRM space when we have asked this question (Figure 9).

Of those that have a vendor supplied and supported system, only about 15% of the respondents were able to claim that the implementation of that ERP/CTRM solution had eliminated the widespread use of spreadsheets. A very small number admitted that while extensive spreadsheet use had been initially eliminated, since the implementation of their new system, the use of spreadsheets was once again becoming common and was increasing over time. More tellingly, a majority indicated that implementation of their chosen solution had not eliminated widespread use of spreadsheets and almost a quarter stated that they still use spreadsheets extensively in their organization (Figure 10).

Figure 10 | Elimination of Spreadsheets



The results indicate that while the implementation of a structured software solution will almost always reduce the dependence on spreadsheets, these systems will rarely eliminate their use entirely. Experience has shown that CTRM software is often only an 80% fit to requirements out of the box in the best of circumstances, with the remaining 20% reflecting the widely varying business practices across the industry and the perceived needs of individual users. Essentially, this makes supplementation of the commercial software with convenient tools like spreadsheets difficult to avoid. In our sample however, 15% were able to avoid the use of spreadsheets altogether after implementing a software solution.

SUMMARY

Spreadsheets have historically been found to be the root cause of many problems and issues in financial and commodity trading and yet, despite numerous stories of how their use has negatively impacted numerous companies, they continue to be widely used. In today's increasingly scrutinized and regulated trading environment, the use of spreadsheets poses an ever-increasing risk of error, fraud or manipulation. Nonetheless, the results of our survey suggest that spreadsheets remain difficult to displace for a variety of reasons, including:

- / Convenience and ease of use,
- / Low cost, yet relatively effective as a solution vehicle,
- / Habit – they have always been used widely in the industry,
- / Ability to fill in functional gaps that may exist within and between commercial software solutions more easily and cheaply than a more structured solution,
- / Virtually everyone has some level of proficiency in using spreadsheet.

Even in our relatively small sample of the industry, a large percentage of our respondents have experienced issues related to the use of spreadsheets, and many of those provided us with their own stories of problems and issues related to their use. However, though a majority of respondents were uncomfortable with the use of spreadsheets in their businesses, they were continuing to see widespread use.

The findings of our survey should be troubling to industry participants. Despite the wide adoption of vendor supplied and supported software solutions, spreadsheets, with all their attendant issues, continue to be in common use in the commodity-trading world. Given these known issues (with the greatest being lack of controls leading to errors and potential abuse), the continued use of spreadsheets should be cause for alarm.

In today's regulatory environment, all trading firms should actively review their use of spreadsheets and seek to eliminate, or least minimize, their use in mission critical areas of their businesses as quickly as possible. "With increased oversight coming from the thicket of emerging regulations, use of spreadsheets will need to be minimized, controlled and audited," according to regulatory expert, Mr. Aviv Handler of ETR Advisory. "Regulations will pressure market participants to move away from spreadsheets. This could lead to a significant increase in IT costs for those who

cannot afford it. Adopting a pragmatic but controlled solution, and resisting vested interests in over engineered solutions, will permit medium and small sized participants to use the best tools for them, rather than for a supplier."

To be fair, spreadsheets are convenient and easy to use tools that probably do have a role in any business; however, trading companies need policies in place that limit where and for what purposes they can be used. There is no denying that Excel is a useful tool, but spreadsheets should not be deployed in mission critical areas of the business; and if they must be, their use needs to be tightly controlled with rigorously checks and constant scrutiny. Unfortunately, rarely are spreadsheets tested nor controlled in the same manner that a commercial system would be before or during deployment.

In summary, it's difficult, if not impossible, to completely eliminate spreadsheets from the trading and risk management environment. Simply put, they are the most cost effective and convenient tools available for data capture and analysis; and as such, they do have a role to play in any business. However, they should be identified as a key financial and operation risk to the business going forward and their potential costs should be taken into account. Given these potential costs and impacts, trading firms should review their policies and eliminate, if possible, their use in mission critical business activities. If it's not possible to completely eliminate spreadsheets from these functions, they must be tightly controlled and closely managed.

Additionally, if they are to be used in a trading environment, spreadsheets should be treated as any other IT solution and fall within the same policies and procedures to ensure they are adequately tested, checked and updated at all times.

There is little doubt that spreadsheet use will continue. Unfortunately, given the intensifying regulation of energy and commodity trading, their use will also become an increasing concern to those regulators. Given this increasing scrutiny and the well-known weaknesses of spreadsheets, any company that has not yet sought to reduce or eliminate their use through by deploying a more structured, secure and auditable vendor supported solution should move quickly to do so. Several vendors, such as generation 10 for example, specialise in delivering cost effective solutions to collect and process trading and related data to provide security and peace of mind at a lower total cost of ownership.

ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the ETRM and CTRM markets. We provide the invaluable insights into the issues and trends affecting the users and providers of the technologies that are crucial for success in the constantly evolving global commodities markets.

Patrick Reames and Gary Vasey head our team, whose combined 60-plus years in the energy and commodities markets, provides depth of understanding of the market and its issues that is unmatched and unrivaled by any analyst group.

For more information, please visit:

www.comtechadvisory.com

ComTech Advisory also hosts the CTRMCenter, your online portal with news and views about commodity markets and technology as well as a comprehensive online directory of software and services providers.

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**Commodity
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CTRM Market Research, Analysis and Insights

ABOUT



generation10

Generation 10 is a company providing data management services and solutions throughout the commodity supply chain with specialist domain expertise in softs/ags. With core competencies in origination, through logistics supply chain tracking and optimization, to cost control and risk management, they serve a diverse international client-base from producers, brokers, traders, importers and processors to banks, insurance and government institutions

Solutions come pre-configured for a range of commodities, enabling fast implementations on a web-based, device-friendly, modular platform that is feature-rich, easy to use and highly configurable to individual user preferences.

Their flagship CTRM platform, Commodity Manager, is the only offering in the market to offer end-to-end transaction lifecycle processing, integrated CRM, origination, supply chain optimisation, embedded analytics, risk management and compliance modules on a single, modern, affordable and scalable platform.

Available as a hosted Software-as-a-Service, or on-premise solution.

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