



# Improving the Digital Journey by Automating Data Categorization

A WHITE PAPER ABOUT HOW TO AVOID BLOCKING GAPS IN THE PROCUREMENT DIGITALIZATION PATH

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## ABSTRACT

Procurement has been talking – almost exclusively – about digital transformation for years now. But despite the focus and energy companies have thrown at the initiative, many companies have failed to advance their digital journey as far as they would have liked. While challenges such as system implementations, change management, and budget constraints seem to be the main culprits, the true answer may actually be much more straightforward: data classification.

The more reliant an organization is on automation to keep processes moving smoothly, the better their underlying data must be. Each time a purchase request is submitted, the requisitioner has to select a category for the product or service. If they chose the wrong category – either because it is inconvenient for the requisitioner to search through the available options or because they prefer to use natural language descriptions – the existing data quality issues become greater.

In this paper, we will outline the five most common gaps in data categorization, the impact each has on the business and its supplier relationships, and how procurement can take steps – including the use of a virtual assistant – to improve the categorization process while also improving the buyer's user experience.

THE FUTURE IS ALREADY HERE -  
IT'S JUST NOT EVENLY  
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**STRATEGY IS THE ART OF MAKING USE OF TIME AND SPACE. I AM LESS CONCERNED ABOUT THE LATTER THAN THE FORMER. SPACE WE CAN RECOVER, LOST TIME NEVER.**

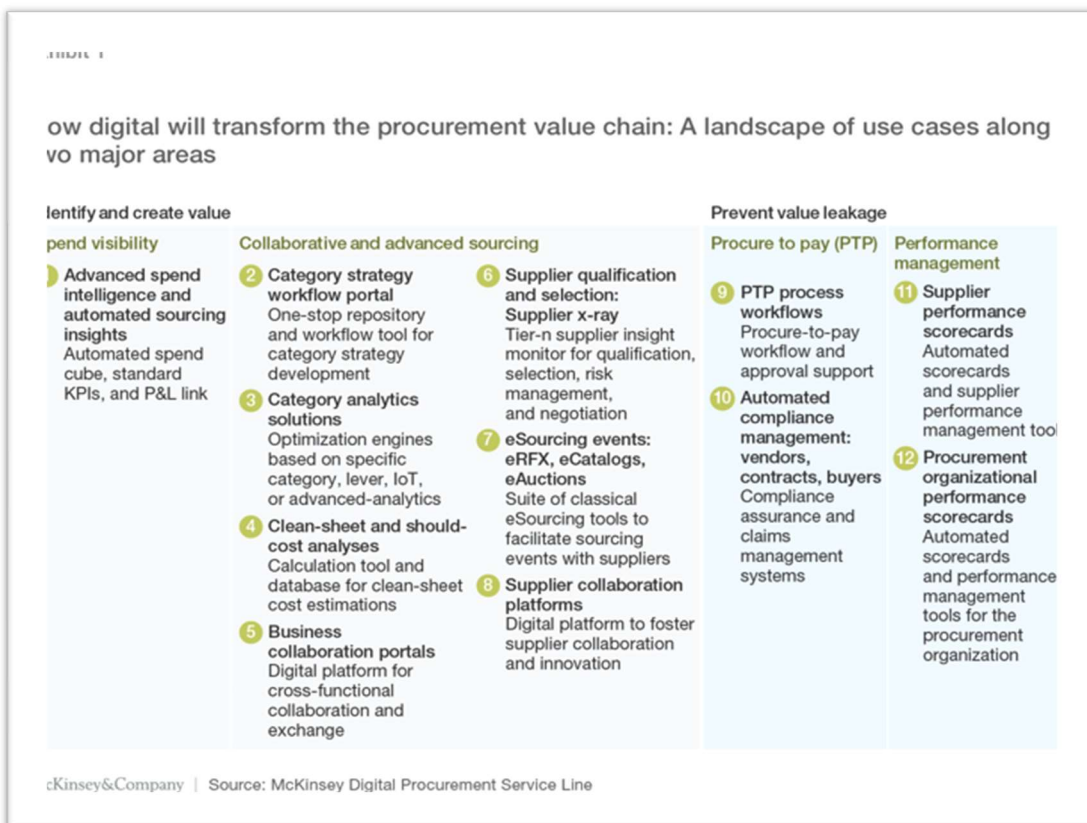
**NAPOLÉON BONAPARTE**

There is often confusion about the real difference between ‘procurement’ and ‘purchasing,’ both of which are essential business processes. While the terms are sometimes used interchangeably, they refer to completely different processes. Purchasing is a cut and dry practice, a transactional activity focused on spending money to acquire goods and services. Sometimes this activity is delegated to procurement’s internal clients, distributed buyers in the organization that have broader operational responsibilities.

Procurement is the team charged with the management of acquiring third-party goods and services. They negotiate contracts, identify the suppliers that offer the best value for price in each category of spend, ensure that suppliers perform at the level of quality expected, and vet suppliers for reliability and relative risk.

More and more organizations are digitally transforming their procurement organizations to take advantage of predictive approaches to strategic sourcing, the automation of transactional procurement, and proactive supplier relationship management.

The question of how to deal with the range of digital procurement solutions in the market is crucial. As McKinsey has pointed out: “The digital applications that will make a real difference to a company’s procurement performance fall into two broad areas: tools that identify and create value, and tools that prevent value leakage.”<sup>i</sup>



If we consider the problem from an organizational perspective, A.T. Kearney says: “Leading procurement organizations still focus on three pillars of procurement excellence to add value in the age of digital disruption. Essentially, the pillars of procurement excellence remain the same; but the challenges shift, and huge new opportunities come about.” (See figure below)<sup>ii</sup>

Procurement excellence in the digital age			
	Category excellence	Team excellence	Supplier excellence
Adopt technology to become more effective	<ul style="list-style-type: none"> <li>Advanced analytics and automation optimize the work for "simpler" categories</li> <li>Improved access to information enables predictive modeling and strategic foresight</li> </ul>	<ul style="list-style-type: none"> <li>The procurement organization is pared down and centralized, with specific tasks and teams outsourced</li> <li>The procure-to-pay process will be automated, with a small team overseeing them</li> </ul>	<ul style="list-style-type: none"> <li>Straightforward mechanics of scorecard creation and performance monitoring will be automated</li> <li>More interconnected supplier network pragmatizes joint collaboration</li> </ul>
Use digital innovation to work in new ways	<ul style="list-style-type: none"> <li>Focus shifts to categories where suppliers tend to have more leverage and start to mutually create value</li> <li>Tools will simplify and automate category information gathering</li> </ul>	<ul style="list-style-type: none"> <li>Procurement roles will evolve to a mix of analytical and creative thinking roles</li> <li>There will be a premium on problem solvers who have the ability to work across functional boundaries</li> </ul>	<ul style="list-style-type: none"> <li>Procurement can double down on using the more transparent information flow to shape supplier behavior and create a competitive advantage</li> </ul>

Source: A.T. Kearney analysis

Any digital procurement solution must enable the future of procurement by: a) providing visibility and accessibility that until now has been unavailable because of massive, unstructured or semi-unstructured data sets; b) allowing more sophisticated analysis; c) driving better supplier strategies; and d) enabling more efficient operations and preventing future data quality leakage.

## MIND THE GAPS

### GAP 1 – CATEGORY GRANULARITY LOSS

Unfortunately, organizations don't start with a clean slate. The most common starting point involves years' worth of legacy ERP implementations, migrations, harmonisations, and attempts - some more successful than others - to implement Material Master Data management tools, first generation business intelligence (BI), and eProcurement platforms.

Today most procurement organizations and processes are ruled by one or more categorization structures, especially when there are multiple ERPs in place. ERP transactions involving purchase requisitions and purchase orders, as well as the materials item master, catalogue entries, supplier master data and so on, require classification or categorization.<sup>1</sup>

Most digital platforms adopt a standard categorization system: UNSPSC or the less frequently used eCl@ss. All too often this leads to a conflict between systems. Most product specialists recommend solving this problem by mapping the categories between the systems, sometimes with the addition of business rules. This situation ultimately leads to a lack of granularity, sacrificing very details that are the key enabler in digitalization.

In reality, most category structures are incompatible, at least in part. This leads to a mix of "one to one," "one to n," or even "m to n" relationships between the different category structures. Business rules also lead to weak levels of granularity. For instance, here is a common example: "If the provider is XYZ the category must be ABC." Anyone familiar with spend management will recognize that this approach is doomed to fail with multipurpose suppliers. Relying upon cross-system mapping or business rules tends to diminish the quality and granularity of business data, undermining procurement's efforts at digitalization.

<sup>1</sup> Material group – or "MG" - is the name used by SAP for grouping of materials and services according to their characteristics, also called Commodity Class in JD Edwards. For the purposes of this paper we will continue to refer to it as MG. We will refer to all the above-mentioned data as business data.

## **GAP 2 - SPEND MISCLASSIFICATION**

Another issue that can amplify data quality issues is the incorrect assignment of MGs or the use of an overly generic MG in the business data. This is the source of most of the reliability problems in reports generated by ERPs or BI tools, and it does not address all of the downstream procurement processes affected by incorrect MG assignments. The business is ultimately saddled with a knowledge management problem; the MG matters to procurement but is normally assigned by internal clients that may not be aware of the problems they cause with spend misclassification.

To make things worse, organizations often attempt to solve this problem by reducing the number of categories (and therefore the granularity) available to requisitioners in an attempt to simplify the process of choosing the right category for each transaction. An oversimplification of this approach demonstrates just how misguided it is: having just one category would result in 100% accuracy but completely useless business data.

It is worth mentioning that all companies are aware of this problem regardless of their size and their maturity - even if they have a single ERP client. The problem is only exacerbated when there are multiple ERPs, languages, and MG structures.

## **GAP 3 – DIFFICULTY COMPARING TRANSACTION DETAILS**

In purchase requisitions, purchase orders, materials masters, and contracts, the materials and services to be purchased are described with short unstructured text approximately 40 characters long. The descriptions typically have the following characteristics:

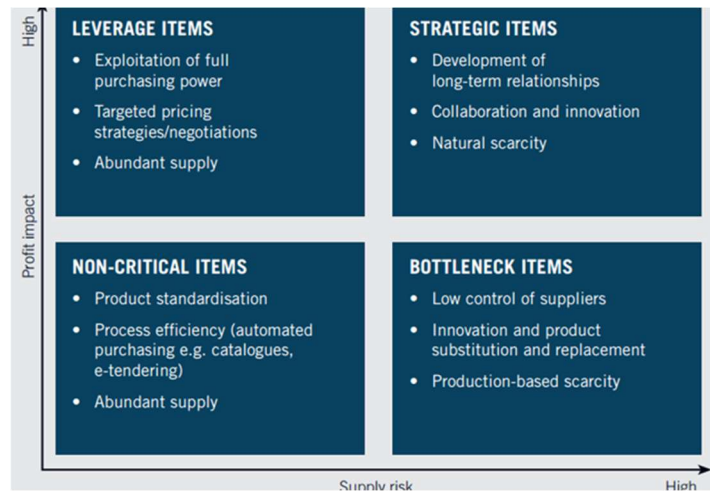
- They are written by different individuals, with everyone following their own criteria instead of corporate naming conventions (where present).
- They include acronyms, abbreviations, codes, jargon, and contracted syntax in order to fit in a predefined space. These descriptions are not written in natural language accessible to everyone and require knowledge of someone else's thought process in order to be correctly understood.
- They are ambiguous, with their real meaning depending on the context (e.g. 80gr. can be a weight if associated to copy paper but as a measure of sandpaper grain type).
- Their meaning changes slightly in each specific setting and evolves over the time, even within the same domain.
- In multinational companies, they may be written in the native language of each buyer.

Given these challenging, if common, characteristics when trying to run reports, companies are often faced with a confirmation of the old IT paradigm: garbage in = garbage out.

## **GAP 4 – LOW NO-TOUCH RATE**

Procurement works hard to support the business by proactively negotiating contracts and price lists, creating items in the material master, and onboarding suppliers so that spend is captured by catalog-driven process flows. And yet, free-text orders still remain a huge percentage of overall purchase orders, escaping the standardization value associated with digital transformation.

There are extensive academic analyses showing that the Pareto principle is valid in the distribution of orders by value and quantity. In other words, 80% of the expenditure is represented by 20% of the orders. When we analyse the 80% of the orders that represent 20% of the expenditure, the last 5% by spend is usually associated with more than half of the orders procurement must manage. Often referred to as the 'long tail,' these are mostly materials and services defined as non-critical items in the Krajlic<sup>iii</sup> matrix.



In order to better manage these transactions, procurement must proactively negotiate contracts and price lists, creating material master data if the purchasing frequency justifies stock management and looking for suppliers able to cover higher percentages of expenditure with standardized materials in the catalog. The procurement process (creating the order in the ERP or in the eProcurement platform, selecting standard/contractualized materials) can be fully delegated to internal customers without procurement having to intervene. This is the importance of the "No Touch Rate" metric: the percentage of orders not touched by procurement during a certain period. The higher the percentage, the more efficient and effective the process.

One main reason it is difficult to improve the No Touch Rate is associated with the search engines made available by ERP and S2P platforms. Their technology is based on keyword searches or 'Fuzzy Search' technology. Unfortunately, internal clients often do not know the words used to describe a given material, especially when words in a foreign language have been used. When faced with search results that do not match his needs, the internal client - pressed by immediate priorities - creates a request for a free text order that adds to procurement's already overwhelming work.

Some organizations have decided to alleviate the problem by defining simplified procedures for delegating so-called 'low value orders' to the internal client. A threshold is established, below which the whole process is delegated to the internal client. Procurement then controls the aggregate expenditure. This practice, although widespread, is one of the areas where fraud can be nested in purchasing processes. According to Kroll's most extensive study, 74% of European companies have experienced fraud<sup>iv</sup>.

Because free text orders remain a significant percentage of the total, procurement needs to find a realistic way to manage them. This type of order, which does not refer to a standard product bought under predefined commercial conditions, must necessarily be 'managed' by a dedicated purchasing process that adjusts its complexity to align with the economic value and technological complexity of the purchase. Without supporting automation, the effort required to manage this spend will distract from the critical business support work procurement is trying to prioritize.

## GAP 5 - SUPPLIER MISALIGNMENT

Another critical factor to the quality of business data is the categorization of the supplier base. Many times, there is misalignment between the categorization assigned in the supplier master (whether it is self-assigned in a supplier portal or defined by procurement) and the actual materials or services the supplier is able to provide. This is typically due to a gap in procurement's platforms, when the supplier or procurement map the supplier's offerings according to the MG structure. The problems discussed in Gap 2 are at risk of reoccurring in full. A similar argument is made for S2P platforms where suppliers are normally classified at the second level of a standard as UNSPSC. The categorization is too generic, and many times does not reflect the real categories that the supplier is able to provide. This leads to enormous inefficiencies because this information should form the basis for selecting which suppliers to invite to a



sourcing project. When it is inaccurate or incomplete, procurement will likely invite suppliers who are not relevant while unintentionally excluding those of greatest interest.

## PREVENTION IS BETTER THAN A CURE

For organizations looking to embrace digital solutions, the above described business data gaps often get in the way and lead to frustration. Fortunately, there are emerging technologies that can enhance the value of the information contained in legacy systems. In many cases, they involve minimal investment, have low requirements for integration, and yet still have a strategic impact on the implementation process.

Each Gap in the following table is listed alongside the action(s) needed to assure digital excellence and the technology enabler that supports it.

	CATEGORY EXCELLENCE	TEAM EXCELLENCE	SUPPLIER EXCELLENCE
<b>GAP 1</b> <b>GRANULARITY LEAKING</b>	Fix massive categorization issues of material master data and POs/invoices from the last 2 years in order to achieve clear visibility into spending and inventories.	Involve your domain experts to refine the MG structure for the largest spend categories and weak or poor classification granularity.	Fix the mis categorization of the current supplier base
<b>GAP 2</b> <b>SPENDING MISCLASSIFICATION</b>	Implement a virtual assistant capable of suggesting the right category based on a description provided by the requisitioner in his/her own natural language and embedding it in the ERP/SRM/S2P transaction. This is crucial for tail spend management.	Purchase requisitioners have the best knowledge about the material or service they require. Virtual assistants based on AI must include automatic learning from each interaction with purchase requisitioners in order to compile their knowledge.	Support self-onboarding via a supplier portal by introducing a virtual assistant to properly categorize their goods and services.
<b>GAP 3</b> <b>HARD COMPARISON OF MATERIALS AND SERVICES PURCHASED</b>	Material master data cleansing that includes categorization, identification of duplicates, connection between categories with a 'dummy code' to avoid any physical inventory impact, generation of multilingual normalized descriptions.	Select a platform that makes it possible for inventory managers to enrich materials information, allowing for the transfer of personal knowledge to a centralized system.	Open a supplier self-onboarding platform based on virtual assistants that can support preventive categorization of their catalogs.
<b>GAP 4</b> <b>LOW NO-TOUCH RATE</b>	Implement a virtual assistant capable of suggesting the right material, catalog item, or contract item based on a natural language description provided by the requisitioner and embedding it in the ERP/SRM/S2P transaction. This is crucial to increase the no-touch rate.	Virtual assistants improve the local usage of centrally defined master agreements.	Virtual assistants can support suppliers in assigning the right material code to the items in the pricelist
<b>GAP 5</b> <b>SUPPLIER MISPLACEMENT</b>	By categorizing historic spend, it is possible to fix the misalignments between the categories assigned in the supplier master data and the actual categories of products and services they supply.	The supplier database must be able to form connections between suppliers that belong to the same 'parent' company, especially for those with completely different names.	

## BRINGING A VIRTUAL ASSISTANT INTO THE S2P PROCESS?

Even if the quote from Donald Michie below is close to be a quarter of a century old, humans' role in personal interactive services still cannot be underestimated. While this is true in general, it is crucial to comprehend it in the context of Source-to-Pay (S2P) processes.

The human knowledge involved in procurement processes is far more complicated than the simple questions that Siri, Alexa, and Cortana are trained to address. But while the contribution of humans is crucial, they must be user friendly and scalable.

*SO FAR, NO MACHINE OR  
PROGRAM THAT CAN PASS  
THE TURING TEST  
SUCCESSFULLY HAS BEEN  
PRODUCED*

*DONALD MICHIE (1993)*

Imagine an app embedded in the ERP or supplier management process that is capable of suggesting - in real time - the 5 most suitable categories or the 10 most similar items based on the requisitioner's natural language description. A short list could be automatically generated from hundreds of categories or dozens of thousands of materials, catalogs, or contracts. Having this functionality available would significantly improve the requisitioner's experience by making it easy and fast to select the most appropriate category.

This solution comes from a combination of three components:

- State-of-the-art machine learning technologies that improve based on historical data
- Semantic rules that encode (and infer) domain-specific knowledge
- Crowd-sourced contributions from requisitioners that keep the system robust over the long-term

With this approach, it is possible to customize the virtual assistant for the company's unique classification requirements, and making it possible to:

- Go from local incoherence to worldwide classification coherence
- Reduce inconsistencies by avoiding generic classifications and supporting specific categorizations
- Improve the usage of material master, catalogs, and master agreements



## ABOUT CREATIVES SPA

Creatives has developed Artificial Intelligence solutions to provide Real-Time Procurement insights, optimize processes, and make business data usable by overcoming geographical, language, and ERP Systems barriers. Creatives helps many S&P Global organizations achieve their saving goals.

The Company is based in Verona – Italy and has developed a prestigious client base in Germany, Italy, Spain, France, Portugal, UK, Belgium, Luxembourg, Austria, Sweden, USA and China.



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THE FIRST STEP IN WISDOM IS TO KNOW THE THINGS THEMSELVES; THIS NOTION CONSISTS IN HAVING A TRUE IDEA OF THE OBJECTS; OBJECTS ARE DISTINGUISHED AND KNOWN BY CLASSIFYING THEM METHODICALLY AND GIVING THEM APPROPRIATE NAMES. THEREFORE, CLASSIFICATION AND NAME-GIVING WILL BE THE FOUNDATION OF OUR SCIENCE.

CAROLUS LINNAEUS – 1751 – FOUNDER OF THE MODERN BOTANIC SCIENCE

<sup>i</sup> Driving superior value through digital procurement,” (Pierre de la Boulaye, Pieter Riedstra, and Peter Spiller, McKinsey, April 13, 2017), <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/driving-superior-value-through-digital-procurement>

<sup>ii</sup> Chee Chiew Wong, Young Han Koh, “Procurement: making digital transformation work for you,” A.T. Kearney, <https://www.de.kearney.com/procurement/article?/a/procurement-riding-the-transformative-digital-wave>

<sup>iii</sup> Harvard Business Review - Purchasing must become supply management. How Managers can guard against material disruption by formulating a Supply Strategy (Peter Kraljic – 1983).

<sup>iv</sup> SAS - Protect the Integrity of the Procurement Function (Jen Dunham, Chris McAuley – 2019)

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