

A Whitepaper by Dr. D. Cahmen

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Introduction

The question "Who exactly is this person?" is an essential one — both in personal and professional life. The answer, however, is not nearly as simple as the question. The quest for such an answer can lead one down a never-ending labyrinth.

From a psychological point of view, the question has a long scientific tradition. One of the main windows to build an understanding here is found in the concept of personality. However, this includes the finding that humans vary in their personalities and also the ways in which they express their personality. Measuring these variations leads to the art and science of psychometric assessment.

"Psychometrics can be described as the science of measuring psychological abilities, attributes and characteristics". (...). Modern psychometrics is embodied by standardized psychological tests." (Buchanan & Finch, 2005, p.1)

Many useful psychometric models and scales have been constructed till date in this field. As a result, different personal characteristics can be screened or measured by employing psychometrics.

The study and use of psychometrics goes far beyond the scientific community. One area where it is heavily employed is talent acquisition. The Yale Tribune (2018) reports that 80% of Fortune 500 companies in the USA are employing psychometrics for recruiting purposes. Psychometric assessment is broadly recognized as a key ingredient for the selection of "right" talent because it allows objective measurement of personality with a comparably high predictive strength (e.g. Edenborough, 2005). Traditional models such as DISC or Big Five (OCEAN) have been proven to work in many organizations around the globe and should not be left out when designing or implementing an effective and knowledge-driven recruiting process.

In contrast to this traditional use case, the relationship between psychometrics and sales has been a different story altogether. Sales and marketing teams have always understood the need to include personality in the mix. Yet, by the nature of their functions, it has been mostly impossible to collect reliable data to perform psychometrics in that context for the longest time.



In the last decade, technically supported, digital forms of psychometric assessment have emerged, which can be summarized as a game changer in many ways. As such, it has become a topic of interest for progressive sales organizations to include this new approach in the mix to gather a psychological understanding of consumer behavior and to put associated personality insights in action.

This Whitepaper presents an overview of the Computational approach to Psychometrics, focusing on the potential applicability of personality insights in the context of sales, highlighting the most promising application areas and the associated potential impact zones.

Computational Psychometrics



Around a decade ago, an innovative technical approach emerged, which opened up formerly unimaginable possibilities, by making it easy to extract personality insights with psychometric models by tapping into new data sources. Along with the development and expansion of artificial intelligence and big data, the area of Computational Psychometrics began to garner interest - both in and outside the scientific community.

From being applied for microtargeting purposes on the backstage of Brexit Referendum or the US Presidential Election in 2016 (Stark, 2018), Computational Psychometrics has proved its capability but also raised public concerns. In parallel, recruiters, marketers and salespeople have also recently found interest in weaving these new possibilities into business processes. This section discusses what Computational Psychometrics is all about.

Most people in the 21st century have a significant online presence: LinkedIn and Twitter profiles, authored articles, newsletters, just to name a few. In other words, the ongoing digitalization of human interaction, especially, the broad usage of social media platforms as well as their exponential growth in terms of users and content have created a seemingly ever-growing data pool in the last two decades (Matz & Netzer, 2017).

Figure 1 provides a brief overview and offers some quantitative data on what happens online, particularly on social media, within a span of 60 seconds.

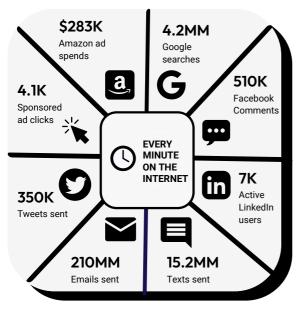


Figure 1, The internet in 60 seconds; Socialmediatoday (2020)

It should be noted that user generated content can also be utilized to extract psychometric profiles because such content includes personality insights on that specific user. Many people tend to use social media as an extension and expression of themselves. Studies underline a transfer between offline and online behavior in this context (Amichai-Hamburger & Vinitzky, 2010). Overall, this is what makes social media and the related content so interesting, and not just for scientific researchers.

Computational Psychometrics makes these hidden personality insights visible and extractable, even if they're often expressed between the lines.

In a nutshell, associated approaches allow psychometric assessment of personality by tapping into that seemingly ever-growing data pool. The following definition serves a good introduction to get a better grasp on the core elements in the backstage of this art and science.

"Computational psychometrics is defined as a blend of data-driven computer science methods (machine learning and data mining, in particular), stochastic theory, and theory-driven psychometrics in order to measure latent abilities in real-time" (Polyak et al., 2017, p.3).

This ever-growing data pool is therefore the backbone of the increasing scope and possibilities opened up here.

Figure 2 provides a high level overview of popular approaches based on Computational Psychometrics, including the sources where the data is extracted from, and which digital indicators have been scientifically utilized in this context so far.

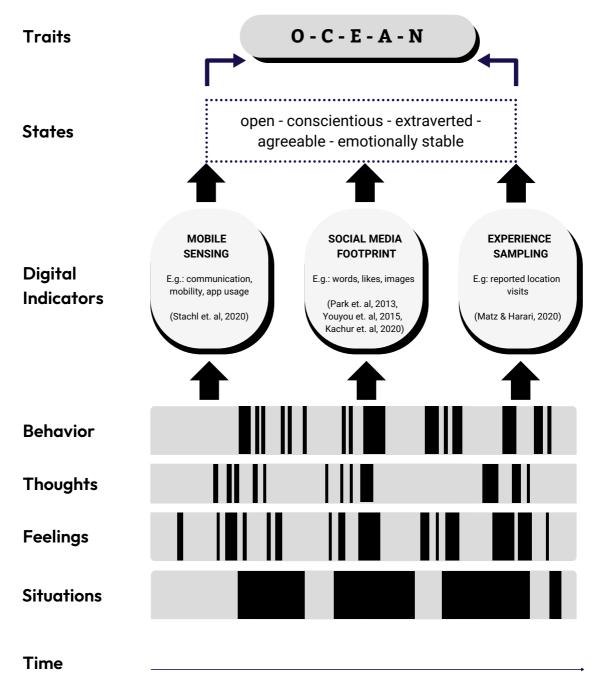


Figure 2, Overview of Computational Psychometrics; Stachl et al., (2021)

In summary, several new valuable forms of digital psychometric assessment have emerged that all sit under the umbrella of Computational Psychometrics. Although different data sources or digital indicators are utilized and analyzed within these different forms, it should be highlighted that most associated personality mining algorithms which lay out the technical backstage for the assessment make use of the Big Five (OCEAN) Model (Stachl et al., 2021). However, it is not the only psychometric model that is employed. For example, the DISC Model is also heavily utilized in this context.

Studies have already proven the power of Computational Psychometrics-based approaches (Rathi et al., 2022; Thimmapuram et al., 2022), making it a promising innovation that leads psychometrics into the digital era (Matz & Netzer, 2017). As such, it is scientifically discussed as being game changer as it introduces valuable data sources to psychometric assessment which ultimately provides a new window into customer behavior (Matz & Netzer, 2017). As a result, employing Computational Psychometrics and making use of this window opens up new possibilities for scientific application areas such as consumer psychology. This ultimately leads to other practical application areas such as marketing and sales where this would be a valuable addition to traditional process design.

Personality Insights in Sales: Understanding Consumer Behavior

The importance of understanding consumer behavior can not be rated high enough when it comes to sales. As Gartner (2021) puts it, "to grow revenue, sales teams need accurate insights about buyers and their behaviors and intent" (Wiles, 2021). Gathering such insight, and knowing how to make use of it, can be clearly highlighted as two components that no sales organization should leave out of its process design and approaches.

From a psychological point of view, the quest of understanding consumer behavior sooner or later leads to the concept of personality.

This concept is scientifically discussed as being a highly powerful mainframe in the context of sales. Amongst external factors (e.g. situation, age, budget) and other internal factors (e.g. motivation, mood), personality acts as a driver for behavior.

"Personality plays a significant role in consumer buying behavior since different consumers have different personality traits which reflect their buying behavior" (Onu, Emmanuel & Garvey Orji, 2014, p.240).

Consumer behavior additionally includes the decision-making process that runs in the background when individuals make purchase decisions. "Personality is one of the psychological variables which influences purchase decisions of consumers" (Madhavi & Lakshmi, 2020, p. 6678). It should be noted that many other variables apart from endogenous and psychological factors can have an influencing effect here.

FACTORS INFLUENCING CONSUMER BEHAVIOR

DIRECT OBSERVABLE DEDUCTIBLE INFLUENCES INFLUENCES Endogenous Exogenous · Demographic factors Family Economic factors • Motivation Appurtenance Personality · Marketing mix factors Reference Learning Social class · Situational factors Attitude Culture Subculture **CONSUMER BEHAVIOR**

Figure 3, Factors Influencing Consumer Behavior; Cetina, Munthiu & Radulescu (2012)

From this perspective, personality insights can be highlighted as an important element on the quest of understanding consumer behavior. This also leads into the fields of trait theory and Computational Psychometrics as already noted which can be summarized as a powerful approach to enter this psychological backstage of sales. Even for those sales and marketing teams who felt the need to build a better understanding of this backstage and to include personality traits in the mix, it was most likely a mission impossible to collect reliable insight for the longest time. However, there have been other significant efforts to understand potential customers, with various instruments being employed in this context.

"Traditional approaches to gathering 'human-centric' consumer information include extensive customer surveys, focus groups, interviews, observation studies and limited scope secondary data." (Matz & Netzer, 2017, p.7)

It should be noted that these instruments can be effective in terms of gathering relevant insights on the focused persons or groups but they are usually associated with some downsides.

- An employment is cost- and time-intensive (Matz & Netzer, 2017).
- Results are prone to various expressions of bias (Matz & Netzer, 2017;
 Stachl et al., 2021).
- They can not tackle personality traits which makes it impossible to extract psychometric profiles (Matz & Netzer, 2017).

What makes Computational Psychometrics so interesting is that it conveniently deploys some of the most relevant scientific psychometric models (e.g. OCEAN, DISC) to assess personality easily employable for sales and marketing teams.

The most prominent example might be The Big Five Model (Costa & McCrae, 1996; 2008) which is typically discussed within the scientific community as "one of the primary benchmarks in the trait theory of personality" (Mulyanegara, Anderson & Tsarenko, 2007). The model has been broadly applied in the field of Consumer Psychology in the last 20 years for researching purposes (Wojciechowska, 2017). More research still needs to be enlisted but several studies underline a correlation between consumer behavior and the personality traits of this model (Mulyanegara et. al, 2007; Wojciechowska, 2017; Madhavi & Lakshmi, 2020). The question is not so much if these traits affect consumer behavior; it rather boils down to gathering how certain personality profiles tend to influence this behavior and how to make use of these insights within the sales process. Further studies will shed more light on this interesting question. Guided by Computational Psychometrics, any sales organization can take part in this discourse today, finding the answers in sight of their specific market and its members.



Making use of this new window into consumer behavior helps close an important gap in the context of sales. It ultimately leads to interesting application areas and use-cases that are driven by data, rather than led by intuition.

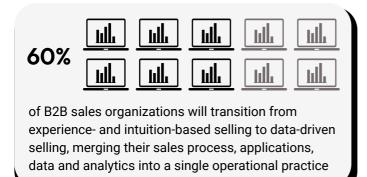


Figure 4, Transition from Intuition-led Selling; Gartner (2020)

Overall, employing Computational Psychometrics makes the sales process more targeted and knowledge-driven. Gartner (2020) relates this important shift to the near future of sales and locates it at the core of an effective sales motion and all associated interactions.

Making Use of a Window: Employing Personality Insights in Sales

Powerful approaches have been developed which use existing data in order to assess personality from digital footprint. "Today, it is possible to scrape, quantify, and analyze years of an individual's life through their social media posts in a matter of seconds" (Stachl et al., 2021, p. 19). This opens the stage for Computational Psychometrics, freeing the assessment from the need to rely on data that has been extracted from self-questionnaires, thus avoiding any perception bias (Stachl et al., 2021). In other words, valuable personality insights are only a few clicks away as a result of this innovation. Getting the necessary ingredients for employing psychometric assessment in the context of sales is clearly not a challenge anymore.

Making use of this window into consumer behavior firstly leads to the weaving of associated personality insights in relevant practices.

Figure 5 shares a broad overview on the main use-cases of personality in the context of sales and its associated components.

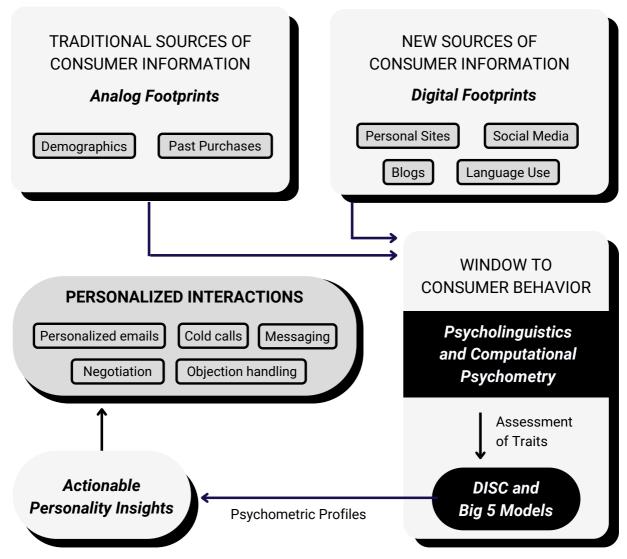


Figure 5, Overview of Personality in Sales; Matz & Netzer (2017, p.8f)

The most prominent use-case for this window is personalized targeting (Matz & Netzer, 2017). This can be highlighted as an essential element of personalization which ultimately includes more elements than just targeting activities.

In a nutshell, personalized targeting boils down to delivering content or experiences that match the targeted person. From a more processual perspective, personalization can be divided into three main stages: learning, matching, and evaluation (Murthi & Sarkar, 2003). The following classic but still-relevant definition offers a closer look into how those three elements translate into action.

"In the learning stage, a firm collects data on its customers and uses the data to learn about the customers' preferences and tastes. In the matching stage, the firm uses the knowledge of customer preferences to develop offerings that best satisfy their preferences and to target these to the appropriate market segment. The last stage consists of evaluating the effectiveness of learning and matching efforts in providing meaningful personalization to the firm's customers" (Murthi & Sarkar, 2003, p.1345).

The art and science of Computational Psychometrics was not available when this definition was written. Making use of this window into consumer behavior and associated personality insights will still produce a highly valuable body of knowledge that ultimately adds a new dimension regarding learning about consumers and also regarding matching content or experiences. In this sense, making use of this window serves as a valuable compass that will inform and guide relevant interactions along the sales process, especially when it comes to its personalization.

Potential Impact Zones

Personalization is clearly a hot topic that has landed on the 21st century's international business landscape. "Companies across all industries are putting personalization at the center of their enterprise strategies" (Edelman & Abraham, 2022). As such, it is also positively discussed in the areas of sales and marketing for some years now. Even facing the given functional differences, it is equally important for both areas with comparable implications. "Investing in personalization efforts to build relationships and create better experiences can pay off with serious rewards for brands" (Morgan, 2020). Several aspects might help further explain the potential impact zones associated here.

First of all, personalization needs to be pushed forward and replace any kind of coldcalling, mass-outreach or spamming. Yet, this important shift is not engraved in associated process design and practices as broadly as it could have been.

Gartner (2021) notes in this context that personalized approaches should replace one-forall approaches because that will lead to a more efficient communication at all touchpoints of the sales process (Ramaswami, 2021). Unfortunately, one-for-all approaches are still mainstream, despite being mostly ineffective as well as emotionally inhumane. The recent LinkedIn State of Global Sales Report reinforces this finding. "Sales tech often leads to sellers simply becoming more efficient at spamming potential buyers" (LinkedIn, 2022). It should be highlighted here that most people do not like being spammed; not when it comes to recruiting mails, and especially not when being approached by a salesperson or an organization. Employing technology in order to push the same content to several people at once might feel tempting, as it does not take a lot of effort and time, but this can be summarized as the total opposite of a best practice.

"Top performers use technology, yes, but they don't use it to simply knock on more doors. Instead they use it to knock on the right doors, finding the welcoming buyers and delivering the right message at the right time" (LinkedIn, 2022).

Therefore, those elements are already serving as crucial drivers for performance in progressive sales organizations today. Finding welcoming buyers as well as delivering right messages lead back to the impact zones of Computational Psychometrics and personalization in the context of sales.

Before diving deeper, it should be noted that using the term sales process is not implying here that selling could be defined as a linear process, or in terms of following an immutable and singular x-staged path which would be free from contextual factors. This would only repeat the failures that underpin the design logic of many traditional sales models (Dixon & Tanner, 2012), as "sales in various settings may involve multiple pathways to success" (Dixon & Tanner p.10, 2012), and these are connected to "the industry context in which the sales phenomenon is occurring" (Dixon & Tanner p.11, 2012). As a result, "(t)here is not a single sales model" (Dixon & Tanner p.11, 2012) which would be highly misleading.

In contrast to many traditional sales models, the presented approach is not following the understanding that product promotion would be sitting at the core of all action, which can be summarized as another restricted and outdated perspective that is associated with many traditional models and process designs (Dixon & Tanner, 2012). Instead, it works with Dixon and Tanner's (2012) more progressive definition of selling as "the phenomenon of human-driven interaction between and within individuals/organizations in order to bring about economic exchange within a value-creation context" (Dixon & Tanner, p.10, 2012). This interaction remains a crucial backbone of making a sale, even when it comes to being a salesperson.

Value creation as well as economic exchange clearly reach far beyond personality and include many other factors. The impact of employing Computational Psychometrics in the context of sales should still not be underestimated as the associated personality insights will open up a psychological understanding of the market and relevant members. Such an understanding should be rated as highly valuable, in terms of guiding important interactions within this exchange.

Before diving deeper, it should be noted that the following sections exclusively focus on sales contexts in which an interaction between sales representatives and (new) customers (online or offline) continues to be a necessary component. It is almost always true in the B2B context, except for extremely small deals which could be entirely automated. However, there are other contexts where human-to-human interaction is not a part of the sales process anymore. For example, e-Commerce giants like Amazon also employ personality insights to better understand their customers but they employ it on a different scale. These organizations extract and analyze huge amounts of behavioral data for millions of users that use the platform to search or buy a product. Here, such insights are utilized algorithmically to support a multitude of use cases from personalized pricing to product recommendations. McKinsey defines this as personalization at scale (Boudet & Vollhardt, 2018). This lane leads into another application area for Computational Psychometrics which will not be discussed within this Whitepaper.

Sorting out Opportunities: Identification of Gravitational Hot Zones

Following the traditional models, the sales process typically begins at the prospecting stage. This should be rethought in relevant discourses and practices, as it does not paint an accurate picture anymore.



"Sales organizations are no longer acquiring prospects (i.e., there is no prospecting "step" in the sales model), but rather are focused on sorting opportunities more appropriately" (Dixon & Tanner p.10, 2012).

As such, this activity or action point is more a process that is permanently running rather than a starting stage of a repeating cycle. It also appears to be not as controllable and unidimensional as the term acquiring implies, because customers are human beings rather than objects of acquisition on an unidimensional wishlist. They should be approached accordingly which could still be optimized in many ways.

Being human, customers express varying personalities that are somehow connected to their behavior as it has been pointed out. Psychometrics can help with understanding this behavior by predicting personality traits. After working with psychometric profiles in a specific sales organization along the outlines of this Whitepaper, it will become obvious after some time that a specific group of profiles appear to gravitate more towards a specific product or service. Overall, having such insights should serve as a valuable addition to sorting out opportunities for at least two aspects.

- The market can be segmented into different categories based on one or more traits that stick out in existing customers.
- The market can be screened for new customers that offer those desired traits simply by following the coordinates of the aforementioned segmentation.

Both aspects allow sales representatives to target the gravitational hot zone of the given market where it will most likely be fruitful in terms of creating interest. Overall, this makes the sorting out process more approachable from a psychological perspective and driven by data and knowledge.

Engagement Guided by Personality Insights

Working with psychometric profiles in the context of sales will not only help with the identification of gravitational hot zones. The associated personality traits can also be utilized as the main coordinates for engagement.



These coordinates provide highly valuable insights that lay out a scientific foundation for interacting with each targeted person in a personalized and effective manner.

"(K)nowing that a consumer follows a cognitive style that is analytical rather than emotional, makes it possible for both computers online and salespeople (...) to adapt their communication to the preferences of the customer" (Matz & Netzer, 2017, p. 9).

Adapting here boils down to aligning related communication with the insights that are associated with an extracted personality type of a given person or group. Figure 6 sheds some light on how the traits of a specific personality type (based on the DISC model) could be translated into action points facing conversations in B2B sales.

No Prospect Too Tough: Personality-Based Winning Strategies

Personality	Why They	Magic	Winning
Type	Are Tough	Lever	Strategy
D Type	Not aligned on goals	Goal orientation	Help envision results
I Туре	Lack of trust	Friendliness	Relationship building
S Type	If approach	Slower	Give them
	feels pushy	pace	time
С Туре	If promises	Detailed	Get into
	seem vague	approach	nitty gritties

Figure 6, Using Personality to Win Over Tough Buyers; Humantic AI (2022)



The figure ultimately shows only one way to make use of a psychological window into consumer behavior. Comparable adaptation and personalization of interaction is clearly impossible to achieve in an objective, knowledge-driven and targeted manner by relying on the typically available data (demographics or past purchases), experience or perceptions (Matz & Netzer, 2017). Not only will customized and personalized communication guide salespeople through relevant interactions, it will also serve as a compass that also helps avoid related landmines.

Personality insights serve as a great foundation for crafting customized communication along personalized and human-centric approaches that better resonate with the targeted individuals. Several authors connect this to a more effective engagement process. A research and practice compendium by McKinsey (2016) notes that "61% percent of customers are more likely to buy from companies that deliver custom content" (Duncan et al., 2016, p. 4). Matz et al. (2017) report a similar finding as they note that personality-based targeting can generate CTRs which are 30% higher than those with standard demographics--based targeting. As a result, utilizing such insight not only offers a convenient pathway to get away from impersonal targeting, it can additionally serve as a booster to the enablement process.

Overall, Computational Psychometrics and the associated personality insights clearly help with finding welcoming customers, as well as delivering them the right message. These approaches can be highlighted as a powerful addition to "getting the right information into the hands of the right sellers at the right time and place", (...), to move a sales opportunity forward" (Gerard, 2013) which is usually defined as the overall goal of sales enablement. It must be noted that employing personality insights is not about gaining control of the interaction with customers or manipulation. This would be an illusion, as it is impossible to do so, especially when facing today's ever growing complexity of products and markets (Dixon & Tanner, 2012). Most importantly, these insights provide a window into personality that is highly useful and powerful for personalization purposes. If this body of knowledge is used effectively, it will help interact with customers much more as unique individuals, rather than an all-alike mass of people, which should be valuable in its own right.

Each Customer at the Heart of Action: Personalized Customer Experiences

Sales should aim at the person who shall use the offered product in their daily life, and again, they will all remain individuals that each express a unique personality. Even when representing an organization, personality will remain one of the factors that works on the backstage of this person. That is why it appears pretty ignorant today to approach potential customers as strangers or as all-alike. A recent survey by Salesforce Research on customer expectations found that 66% of customers feel they are treated as if their personality does not matter (Salesforce, 2020). Sales organizations pay a high price for this shortcoming as this is also associated with a negative customer experience. A survey by Segment notes in this context that 71% of consumers today feel frustrated by impersonal shopping experiences (Segment, 2021). Employing Computational Psychometrics will help tackle this deficit.

The personality insights that are associated with Computational Psychometrics serve as a valuable body of knowledge which can be utilized to guide all personalization efforts. This includes all interaction points, and it plays a crucial role in terms of creating shopping experiences that better resonate with customers (Duncan, 2016). The following research findings offer some insight on the importance and impact of this yet underdeveloped field:

- "80% of customers now consider the experience a company provides to be as important as its products and services" (Salesforce, 2020)
- "71% say they've made a purchase decision based on experience quality" (Salesforce, 2020)
- "91% (...) say they're more likely to make a repeat purchase after a positive experience" (Salesforce, 2020)

In summary, the impact of employing personality insights in the context of sales guided by Computational Psychometrics ultimately reaches far beyond better targeting possibilities and a more effective engagement process. It is also related to creating more positive experiences and customer journeys. This impact should not only be seen through the eyes of effectiveness, and surely not simply through the eyes of revenue, because personalization translates into more humane, authentic, as well as satisfying forms of interaction which is an important outcome, no matter if the product or service is finally sold, or not.

At a bigger scope, following the outlines of Computational Psychometric guided personalization will help follow a holistic vision for the sales function or what Gartner (2020) defines as "moving from a seller-centric to a buyer-centric orientation" (Blum, 2020) which should definitely include rethinking the customer at the heart of action and all related process design. This paradigmatic shift ultimately has many faces but it could easily start with designing touchpoints and delivering personalized interactions that are better aligned with the personality of the approached person.

Conclusion: Humanization of Sales

The long standing quest of sales organizations to better understand consumer behavior from a psychological perspective has recently entered a new era. Computational Psychometrics is a game changer for personality assessment, not only for academic researchers, but also for people in business functions such as sales and marketing.

This development can have significant impact as it provides a valuable window into consumer behavior. It can be accessed simply by plugging into a person's digital footprint. Personalization and personalized targeting are the main application fields for Computational Psychometrics. Progressive sales organizations have already begun to utilize personality insights to create interactions and deliver experiences that are adapted to the approached individuals' psychometric profiles.

Research appears to underline the hypothesis that humans prefer products, services, experiences and communications that are matching or approving of their personality. Enriching the sales process with valuable personality insights in the context of personalization can elevate the effectiveness of relevant sub-processes. The following aspects can be highlighted as potential impact zones of a personalized sales process:

- Performing more accurate targeting through prior segmentation.
- Creating better resonating interactions through tailored communications.
- · Guiding sales enablement and revenue closure.
- Creating custom experiences and customer journeys.

The application of Computational Psychometrics should not only be limited to making a sale. More importantly, it should be used as a window to understand the people involved from a psychological perspective.



In conclusion, Computational Psychometrics and the associated personality insights clearly offer a high applicability in the context of sales. The question "Who exactly is this person?" does not have to lead into a never-ending labyrinth that needs to be navigated through intuition anymore. Employing Computational Psychometrics as a window into consumer behavior can be summarized as a valuable guiding compass which makes sales interactions more knowledge-driven, personalized, and human-centric.

The humanization of sales has only just begun. Personality insights definitely can play a fundamental role in terms of translating this vision into action. On the other hand, it should also be clear that fulfilling this vision will continue to be a challenge in a social context where growing revenue is the main driver of action, or the sum of sold products is the benchmark of success. From this perspective, this Whitepaper stands for more than just a framework to implement Computational Psychometrics or to push forward personalization. As such, it could be also summarized as an invitation to paradigmatically rethink sales from its most important end. That is the customer, not the sales organization. Today, they expect to be treated as individuals, more than just potential revenue. Truly putting the customer at the heart of all action releases the sales process from the processual myopia that is often inscripted in related practices.

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