

## The impact of the digital enterprise on technical communication

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*The digital revolution has changed consumer behavior in the software industry, and digital organizations must keep up with all those changes to stay competitive. As a result, understanding customers' needs has become part of technical communication. By compiling recent data and studies, this article aims at answering the following question: to what extent have technologies impacted the way that technical communicators assist users to offer them the best experience possible? We first analyzed how companies are starting to place more emphasis on customer experience through digital channels, and to what extent those changes have impacted the way technical communicators present the information and talk to customers. Then, we investigated and found out why technical communication is now perceived as a measurable added business value for companies.*

**Keywords: digital era, customer centricity, customer experience, user experience, technical communication**

# Introduction

With the digital revolution, technical documentation has undergone a profound change in the way it is published and consumed. Prior to the proliferation of computers starting in the late 1980s, companies used to provide their customers with physical manuals that they could easily handle while using the products. Even though this approach was the most consistent at that time, it had to evolve along with customers' new consuming habits. Indeed, the digital revolution has changed consumer behavior, especially in the software industry, with the rise of information channels based on the concepts of self-service and mobile computing. Customers can now access services and applications anywhere, anytime, and from any device, and so should technical information. Customers have come to expect convenience, timeliness, and control from companies.

Today, when it comes to computer applications, few users seek help in printed manuals because of their perceived unavailability, inappropriate level of detail or expertise, or simply because the content is outdated (Novick, 2006). To overcome the users' reluctance to consult documentation, companies have to deliver accurate, and adapted documentation to avoid customer discontent and reduce support costs.

Digital organizations must keep up with all those changes if they want to outstrip their competitors. Because of this paradigm shift, more and more companies are turning to customer centricity in order to address customers' new demands.

In this paper, we are addressing the following question: to what extent have technologies impacted the way that technical communicators assist users to offer them the best experience possible?

To answer this question, we will first analyze how companies start to place emphasis on customer experience through digital channels. Then we will determine to what extent those changes have impacted the way technical communicators present the information and talk to customers. Finally, we will see why technical communication is now also perceived as an added business value for companies, and how content effectiveness has become measurable.

# 1. Frictionless customer experience: the rise of self-service and digital communication channels

## **Customer experience: a new business opportunity**

According to Google Trends, interest for the search term “customer experience” has grown over the last ten years to peak from February 2016 onwards, reaching a maximum score of 100. Besides being a buzzword, good customer experience has been shown to make a difference, in a market where competitors offer very similar services and products. Back in 2014, a Gartner survey (Sorofman and McLellan, 2014) found that, by 2016, 89% of companies expected to compete mainly on customer experience.

In its online glossary (Gartner, 2016), Gartner defines customer experience as the “customer’s perceptions and related feelings caused by the one-off and cumulative effect of interactions with a supplier’s employees, systems, channels or products.” We used this definition as the starting point of our research, and we are now able to propose another one that we think is more comprehensive: customer experience is how customers perceive their interactions with a company throughout the overarching customer lifecycle, from considering a product to maintaining it — not just at a certain point in this lifecycle. These perceptions and feelings have an influence on their behaviors over time, allowing them to build more or less memorable experiences. And while user experience has more to do with the design of the product user interface, customer experience encompasses all the touchpoints that a person might have with a company.

To improve customer experience, companies cannot rely on arbitrary criteria and should instead adopt data-driven strategies to better understand their customers. Our research revealed that, to drive customer engagement<sup>1</sup>, a company should gain in-depth knowledge of their customers to be able to create personas and map out their journey<sup>2</sup>. The underlying goal of this method is to identify possible points of friction that could impede customer satisfaction, and to deliver personalized experiences. By 2017, 50% of consumer

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<sup>1</sup> We use the term “customer engagement” as follows: “Customer engagement (is) the representation of the relationship between your brand and your customer. A fully engaged customer should be engaged to the point of advocacy – i.e. they become a ‘fan’ of your brand.” Ian Golding, Customer Experience Professional

<sup>2</sup> Personas are fictional characters representing the variety of customers that a company might have. Once personas are defined, a customer journey map can be created to depict the different stages that customers go through when they interact with a company.

product investments will be redirected to customer experience innovations, Gartner predicts (Beck *et al.*, 2014). Furthermore, when Econsultancy (2015) conducted their survey for Digital Marketing Trends, they asked companies to state the single most exciting opportunity for 2015: customer experience came in first, beating content marketing and mobile marketing. It turns out that companies seem to be more willing to put customers at the center of their business model. But what is it that today's customers want, and what strategies are companies to adopt to improve customer experience?

## **Customer experience strategies**

Companies describing themselves as customer-centric embrace customers needs by bringing them into the product design process. Ideally, companies should identify both the overlapping and delineating points between customers' goals and business goals. Not only can companies ask customers for direct feedback, but they can also resort to embedded and predictive analytics, which now allow them to collect and leverage customers' data more seamlessly. The more customer data companies collect, the more they can understand their customers' behaviors. Knowing customers well enough in turn means greater ability to personalize interactions, and thus increase the convenience of the self-service consumer.

The rise of digital channels<sup>3</sup> and digital customer service has changed the way that consumers communicate and search for product and service information. Along with that came a self-service economy: while significantly reducing friction points, self-service provides customers with a fast, personalized way of resolving their questions and issues. What is more, with the advent of mobile, accessing the information and services that they need at their convenience is made easier. A McKinsey study (Ban *et al.*, 2016) revealed that customers who take a digital-only customer service journey report 19 percentage points higher satisfaction levels than customers who choose a traditional customer support route. Traditional channels are nevertheless not entirely abandoned by customers — voice, for instance, is the preferred channel for escalation (Leggett *et al.*, 2016). If they cannot resolve their issue themselves using a digital channel, customers want to be able to speak to a company representative directly and get a quick answer.

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<sup>3</sup> By “digital channels,” we refer to communication channels allowing customers to interact with companies virtually (such as email, SMS, social media, and live chat), as opposed to traditional channels (such as phone and face-to-face).

As customers are becoming increasingly digitally savvy, they prefer to help themselves with on-demand content (such as knowledge bases or content portals), rather than to resort to traditional channels (such as call centers or retail stores), which they see as time-consuming and frustrating. Customers are getting used to immediate gratification, and getting a quick answer is indeed one of the new customer demands that companies have to cater to. A Forrester report (Leggett *et al.*, 2016) found that:

- 73% say that valuing their time is the most important thing a company can do to provide them with good online customer service.
- 53% of US online adults are likely to abandon their online purchase if they cannot find a quick answer to their question.

Then, a company can address these needs by creating on-demand content exponentially. In 2015, a consumer survey (Nuance, 2015) found that a majority of respondents thought positively about self-service. 75% of survey respondents said that self-service is a convenient way to address customer service issues. 66% of respondents said that they preferred self-service over speaking to a company representative. This data corroborate what many digital influencers are advocating: companies should be investing in self-service to create happy customer experiences and long-lasting customer relationships. This nascent trend has been confirmed by Forrester's recent results (Leggett *et al.*, 2016): survey respondents reported using web or mobile self-service more than speaking to a company representative over the phone. According to the same report, use of help or FAQs on a company's website increased from 67% in 2012 to 81% in 2015 among US online adults. Web and mobile self-service interactions overtake all other channels, such as phone support. The digital age has facilitated information gathering for customers and, as a result, customers are more informed than ever. Empowering customers with self-service tools (such as online communities and forums, developer centers, support portals, etc.) gives them more control over the buying process, and hence a more complete customer experience.

## **Customer experience and documentation**

In an era where content is omnipresent, all types of content, – pre-sales and post-sales content alike – including documentation, have become a key agent in the process of generating revenue. In 2013, a research commissioned by Zendesk (Zendesk, 2013) revealed that consumers perceived brands to be focusing their efforts on creating a better customer experience for sales, while overlooking customer service. Yet sales only represent one part of the customer journey. Customer service is a key component of the customer

experience and can influence either positively or negatively a customer's perception of a company. That is where documentation comes in: it has always been at the core of customer service. While one may argue that documentation is only meant to drive down the costs of support, this ceased to be true when documentation started to be published online, instead of being shipped as book or CD sets. Nowadays, documentation is often made available online for customers to access it freely, at any point in their journey with the company, which means that product and service information can not only be reached during the post-sales phase for support purposes, but also and most importantly, during the pre-sales phase, to assist customers in their purchase decision process. On the one hand, "IT buyers find online search and the vendor website more valuable sources of buying information than face-to-face conversations" (Schaub, 2011). On the other hand, IT buyers report that "the most critical information a product manufacturer can provide is detailed product information and specifications" (Bonawandt, 2011). It is therefore easy to see how documentation has a significant role to play in triggering a purchase decision and is part and parcel of the self-service experience.

According to an IBM survey (Riley *et al.*, 2013), for almost 89% of buyers, high-quality technical content is either important (33%) or very important (56%) to their initial purchase decision. The self-service economy impacts every phase of the customer journey. Yet we found out that not all companies seem to be actively transitioning from internally-focused to customer-focused. According to a survey led by DCL and CIDM (DCL & CIDM, 2016), 30% of surveyed technical communication professionals said their content was not ready for digital business. Among those, respectively 65% and 64% said they could not do anything about it due to lack of budget and staffing.

Then, in spite of the recommendations and predictions that we mentioned, companies seem hesitant to leverage this opportunity to make more profit and alleviate customer support costs, all the while enhancing customer information experience. Our question now is to know how documentation could evolve to better serve customers and keep in pace with trends in customer experience.

## 2. How to design and develop valuable information in a way that addresses software customers' new needs?

### **From the decline of the manual to the dissatisfaction with the PDF**

At the beginning of the practice of technical communication, documentation deliverables were published in the form of printed manuals. Generally, a printed manual is easy to use: the table of content provided is thorough and also has a well-supplied index. But it appears to be frustrating for users to consult printed manuals because their content is not always exhaustive, and it may be hard to find an easy-to-read description of how to perform complex tasks just from looking at still content and pictures (Max, 1994).

Moreover, searching for information in manuals turns out to be time-consuming because it implies to go through numerous steps to find the answer to a question, such as the constant need to refer to the table of contents, which although well listed does not allow to target instantaneously or quickly the answer to the problem encountered, or to the index, which refers to various pages and topics of the manual where the issue or the keyword problem is dealt. Furthermore, it does not give the assurance to achieve with certainty the desired result.

Another major drawback of paper documentation derives from its presentation in black and white, which does not provide a nice experience, from which results a poor customer experience when consulting it (CIDM & ComTech Services, 2016).

In recent decades, we have seen the emergence of documentation in PDF format, which palliated the paper documentation gaps, offering users the ability to find answers more quickly to their questions, or to find more adapted answers, thanks to text-search (CIDM & ComTech Services, 2016). But the PDF has finally shown its limits. As a matter of fact, it appears to be increasingly difficult to navigate through the content it provides, as the full-text search returns every instance of the word. Also, it does not provide a metadata search approach, or any kind of advanced or filtered search. This leads users to resort to other strategies to get their information, such as searching through online search engines (CIDM & ComTech Services, 2016).

Thus, a company may have very good documentation topics, but if the content is not easily searchable, valuable information lies dormant and never reaches customers. In the survey led by DCL and ComTech Services (DCL & CIDM, 2016), 65% of respondents said that customers were asking technical communicators to provide content that is more searchable through the combination of search filters. The time of never-ending search results seems to be about to end. Customers are expecting more targeted search results to provide them with the right answer to their question almost instantaneously, and nothing more.

The same study highlighted a paradox: despite the shortcomings of the PDF, users demand its supply because it provides solutions for both people who are looking for answers fast and those who are looking for security with a downloadable and searchable version, and it revealed that users preferred to use PDFs. However, it turned out that users are asking for content that serves the message and is effortless to read. They conducted an experiment: the same information was presented to customers as a PDF that could be downloaded or as HTML topics. Despite the fact that users had said that they preferred PDFs, they changed their minds when they discovered that they could actually search and find answers to their questions thanks to an easy-to-search and enriched interactive content that can include supplementary material. It appeared that they were then using the HTML output 25.6 times more than they were using the PDFs.

Thus, this study has demonstrated that in reality, the user preference for the use of PDF is due both to the usage and to the choice of technical communicators, who in the era of digital transformation, do not develop sufficiently the way to provide new information content formats. Forrester's analyst Kate Leggett recommends (Leggett, 2016): "organizations must strengthen the foundations of their knowledge management programs so that content is easily findable and contextualized to the customer's situation".

The idea is to develop solutions that provide the benefits of both formats, delivering new formats of help (Herring, 2014).



## Multimedia and new help formats

According to a survey led by the Content Wrangler (The Content Wrangler, 2016), 45.25% of customers declared demanding information in new ways. In another survey led by DCL and Comtech Services, 51% of customers said they were asking for learning videos (see Appendix A4.). More generally, users expect companies to value their time, and they do not want to wade through a list of answers. They want to be better assisted (DCL & ComTech Services, 2016).

Technical communicators must adapt and offer new solutions to cope with this demand. As a result, new content formats have emerged, such as video tutorials and animated GIFs, allowing to reproduce the steps to be performed more easily for a complex workflow. In fact, the survey led by The Content Wrangler demonstrated that 44% of respondents declare using video to create training materials and learning aids. Similarly, new information means take place in technical communication, such as the use of interactive graphics and infographics. A study led by the European Journal of Cognitive Psychology revealed that memory retention was increased by 65% when reading a content that contains both text and pictures (Stenberg, 2006).

The use of interactive graphics and infographics allows better understanding how something works, compare and contrast a topic or simplify a complicated concept. It better attracts readers' attention because half of the human brain is devoted to visual processing.

Although users seem more satisfied with the publication of information through these new formats, it has been shown through a research carried out within the scope of the cognitive load theory (E. Belke, 2008), that switching back and forth between the application software and the related help system represents an important source of difficulties for users. This (Kalyuga *et al.*, 1999). This phenomenon, called the split-attention effect, appears to affect especially novice users.

Another major change in the practice of technical communication to address this phenomenon lies in the development of embedded assistance. The embedded assistance, or embedded help, provides the user with assistive instructions about the task flow of a service directly within the interface. The embedded assistance is task-specific or context-specific, so users do not have to search for the right question to find an answer. Furthermore, they can continue to perform their workflow while being assisted, and do not

have to split their attention between the application's interface and a different help window. The analyst Dave Shepard says: "By providing your users with assistive instruction aside the interaction, it is easier for the user to relate the instruction with how it applies to the application's functionalities than a disconnected FAQ or help section" (Shepard, 2012). Information is moving out of the separate online help systems into the interfaces. He concludes by saying that "instead of revising the existing online help system models, writers must improve the user interface and then work to provide an extremely context-sensitive, embedded user assistance system".

A new assistance format is entering the world of technical communication: the chatbots. The chatbot is a software robot integrating artificial intelligence who can communicate with a user through a messaging service hosted on a website or a social network (see Appendix A5). It belongs to the family of the embedded help, but it differs in the conversational approach it provides. The presence of chatbots inside of an application relieves customers of the burden of browsing huge databases when looking for information. Chatbots automate the information search conversationally by scanning, indexing, aggregating, and querying knowledge bases.

While traditional customer support is not very well-suited to handle the millions of very specific questions that arise during device usage every day, bots can. A study led by Research Now (Research Now, 2013) revealed that customers have not only embraced virtual assistants with conversational interfaces, but they have actually come to expect them. Customers are now demanding the same kind of conversational interactions when they engage with businesses through other channels. As a result, 51% of customers declare that a conversational interface makes it easier to drive things forward when engaging with a company.

All this leads us to believe that technical communication is increasingly influential for companies, since quality help solutions that match customers' needs allow them to build and extend their credibility and expertise (Puterbaugh, 2011).

### 3. How to measure content effectiveness and prove the business value of content generated by information professionals?

It appears that content effectiveness is now valued by companies. To explain why technical communication is changing with the digital era, we must prove that content has become a profitable investment for companies.

#### **Impact on support costs**

Technical communicators are better positioned to think from a user's perspective. This user-centric approach allows them to provide users with all they need to complete tasks or troubleshoot problems by themselves. This ability to empower users can save valuable company resources. Nowadays, technical communicators do not only write documentation, but also improve access to information, test the product, and are sometimes even asked to contribute to user interface design with developers.

Spending time browsing through inconsistent and inaccurate information can get frustrating. And frustrated customers tend to give up and contact customer support. A well-organized and consistent content helps users find their answers and reduce the support calls that are made only because they cannot find the information they need.

Aberdeen, a company specialized in analyzing companies data, has published a study with the participation of 165 companies to demonstrate that product documentation or technical communications contributions are more important than many companies realize (Houlihan, 2009). The study proves that companies which reuse content, with technical communicators more involved in customer experiences, and a documentation more focused on users, are able to state significant benefits:

- 41% decrease in volume of inbound calls to customer support
- 42% decrease in time to resolution within customer support
- 41% increase in customer satisfaction.

Indeed, Aberdeen study shows that customer support is the first area where technical communicators have an impact. With a documentation that better meets users' expectations, companies are able to better educate users. In companies that have a documentation system that is not modernized or does not match real users' needs, the impact is less than half of the results above (see Appendix A1, A2 and A3).

Here is an example of the reduction in support calls and their related costs after a more customer-centric documentation was implemented (Slaughter, 2009). A company receives 400 support calls in March. In April, after the updated documentation was delivered, the company receives 200 support calls during the month (50% reduction). In order to really evaluate the benefits of the enhanced documentation, a few economic metrics are added, according to the estimated cost of a typical support call. If a support call costs \$50, the company has incurred \$20,000 in support costs for March but only \$10,000 in support costs for April: the delivery of the documentation (which is more focused on user needs and better structured) has already saved \$10,000 only with the call center.

Technical communicators use the product to learn how it works from a user's point of view, and therefore reinforce the testing process, which allows to fix bugs and issues before the release. This contribution also helps to avoid later calls to support centers.

### **Impact on lifecycle of product marketing and purchase**

Before the digitalization, technical communicators were mainly in charge of writing printed manuals, which were usually delivered in the package with the product, that is to say, after the sale. Obviously, this is different nowadays, since the content is now on the Internet, and available before the sale. Buyers now tend to check on the Internet before talking to a salesperson, and see how the documentation looks like, the support, and if the technical information needed is accessible.

Indeed, Kathleen Schaub, Research Vice President, CMO Advisory Service of IDC, explained during a meeting at the Business Marketing Association (BMA), that due to the vast amount of information on the Internet, power is now in the hands of buyers, not in the seller's. Often, buyers may be more knowledgeable about products than sales representatives. Along the same lines, a BuyerSphere 2012 report explains that "87% of buyers go out and look for advice before choosing", or before talking to a sales representative. This fact positions technical communicators and authors of online technical contents (blogs, knowledge centers, developer centers, documentation websites, tutorials, get started guides, etc.), as an early entry point in the buyer's journey. Writers now have an impact on product attractiveness in the pre-sales phase. Companies understand this fact (Mike Puterbaugh, 2011), and thus, are working on their digital presence. After the sale, technical documentation is again very important, in terms of support, troubleshooting and loyalty. Customers need a good technical documentation in order to use the product without having to ask questions or call the support centers.

It has also been proven that user experience no longer relies on product user interface exclusively. User experience is now defined as a lifecycle: evaluate, buy, deploy, use, manage, support, troubleshoot, and maintain. Product user interface does not address each of those phases, but at the opposite, technical content does. Content is part of the customer experience.

To sum up, it is now established that the link between technical communicators and other actors of customer experience (such as marketing and sales) is becoming more and more visible, adding value to technical communicators.

### **Impact on productivity within a company**

Another field where companies are starting to realize the added value of technical communicators is employee productivity.

After compiling studies led by IDC and other organizations (Feldman & Sherman, 2004) aiming at determining the impact of information-related costs in the behavior of knowledge workers (i.e., people who work primarily with knowledge products, such as software engineers, scientists, architects, and technical communicators), we have found that:

- Knowledge workers spend up to 35% of their time looking for the information they need.
- Knowledge workers find what they need less than 50% of the time.
- Knowledge workers spend 90% of the time it takes to create new reports in recreating information that already exists.

To express those results with economic metrics and analyze more deeply the impact of having an poorly structured documentation, researchers from IDC have made an experiment with a typical enterprise employing a thousand knowledge workers earning an average salary of \$80,000 a year. This experiment proved that the time spent looking for information (and not finding it) costs this fictitious enterprise a total of \$6 million a year. We can also add the unpredictable costs of taking poor decisions and having frustrated knowledge workers.

Besides, thanks to technical communicators, product developers and designers are able to focus more on time-consuming tasks such as product design and optimization. Technical communicators can bring their user-centric expertise on user interface design to help make a clean and more effective interface for users. We can argue that productivity of knowledge workers can be strongly impacted by the quality of technical communications within the company.

As a result of our researches, we have found that technical communicators (through the content they develop) have an impact on support costs, buyers' and users' experience, marketing strategies, and even employees. And mostly that this impact is now measurable by companies. If companies can estimate the added value of a good product documentation, in economic and human terms, it is natural that they invest more time and money into those services, in order to get closer to the users, develop new information media and technologies, and enable more relations between documentation, marketing, and development departments.

Thus, if companies improve their documentation services, there is necessarily an impact on technical communicators. Interestingly, we also noticed that even technical communicators' job titles are changing, in order to be more adapted to the new aspects of this field: content designer, content developer, information developer, information experience designer, etc.

## Conclusion

With the digital enterprise, technical communicators are no longer only experts in product manuals, but also in customer experience.

Digitalization does not only concern companies, but also customers: their consuming habits have changed and they expect companies to adapt to their new demands. Therefore, it is paramount for companies to consider technical communication as a complete part of the development process to design user-empowering documents.

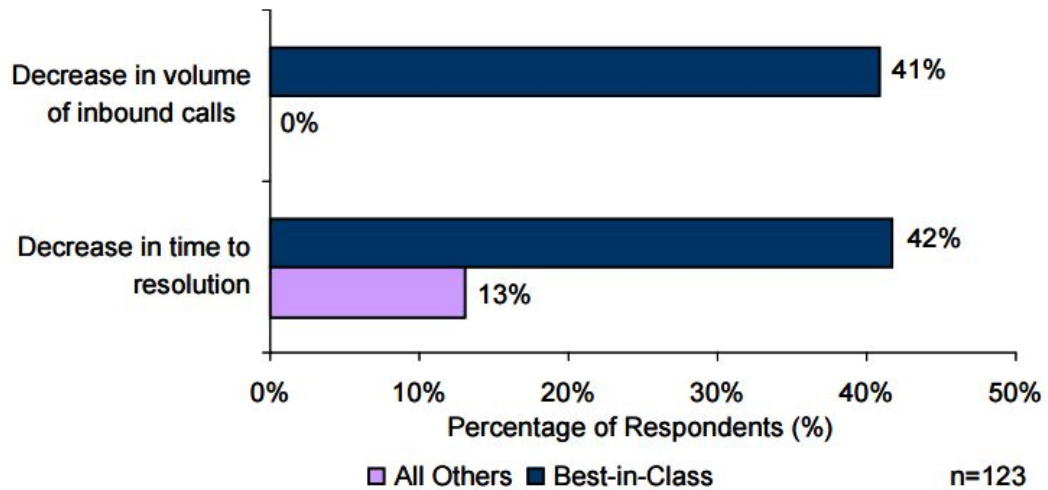
As our study suggests, companies should include technical communicators in the product lifecycle to develop user-centered approaches that focus on the users' needs to help them achieve their goals. Being fully part of the product lifecycle, technical communication also has a substantial impact on a company's finances. Indeed, technical communication not only contributes in creating a new customer experience based on the pursuit of the user satisfaction, but it also drives product sales and relieves support.

Besides, with the constant evolution of digital information technologies, technical communicators should be allowed to collaborate more closely with product development, sales and marketing to more finely-tune the product message.

# Appendix

## A1. Impact in Customer Service and Support

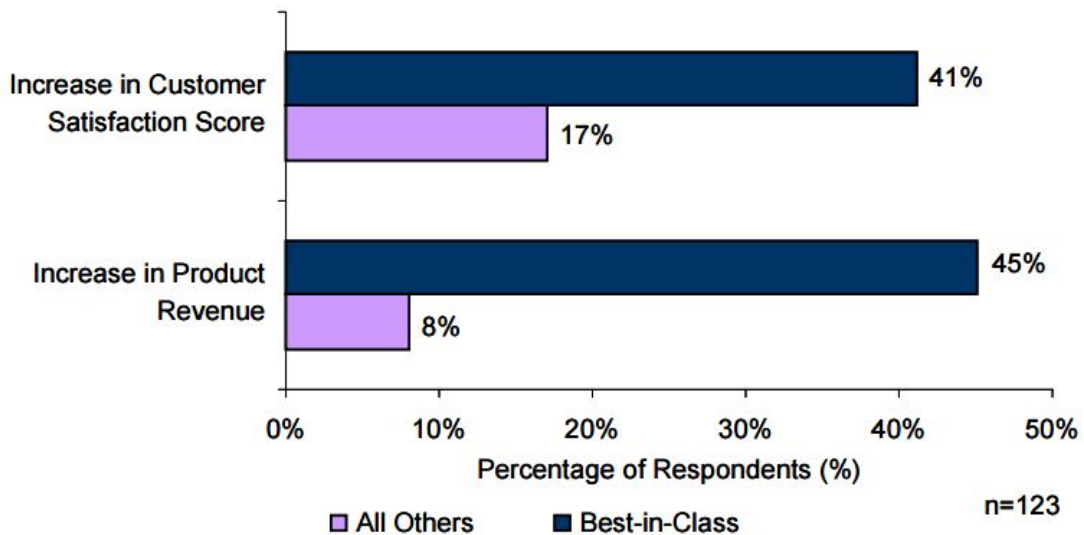
<http://support.ptc.com/WCMS/files/102942/en/6017-RA-TCProfitCenter-DH-11-NSP.pdf>



Source: Aberdeen Group, September 2009

## A2. Impact on Customer Satisfaction and Product Revenue

<http://support.ptc.com/WCMS/files/102942/en/6017-RA-TCProfitCenter-DH-11-NSP.pdf>



Source: Aberdeen Group, September 2009



### A3. The competitive Framework Key

<http://support.ptc.com/WCMS/files/102942/en/6017-RA-TCProfitCenter-DH-11-NSP.pdf>

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p><b>Best-in-Class (20%)</b> — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p><b>Industry Average (50%)</b> — Practices that represent the average or norm, and result in average industry performance.</p> <p><b>Laggards (30%)</b> — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p><b>Process</b> — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p><b>Organization</b> — How is your company currently organized to manage and optimize this particular process?</p> <p><b>Knowledge</b> — What visibility do you have into key data and intelligence required to manage this process?</p> <p><b>Technology</b> — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p><b>Performance</b> — What do you measure? How frequently? What's your actual performance?</p>

Source: Aberdeen Group, September 2009

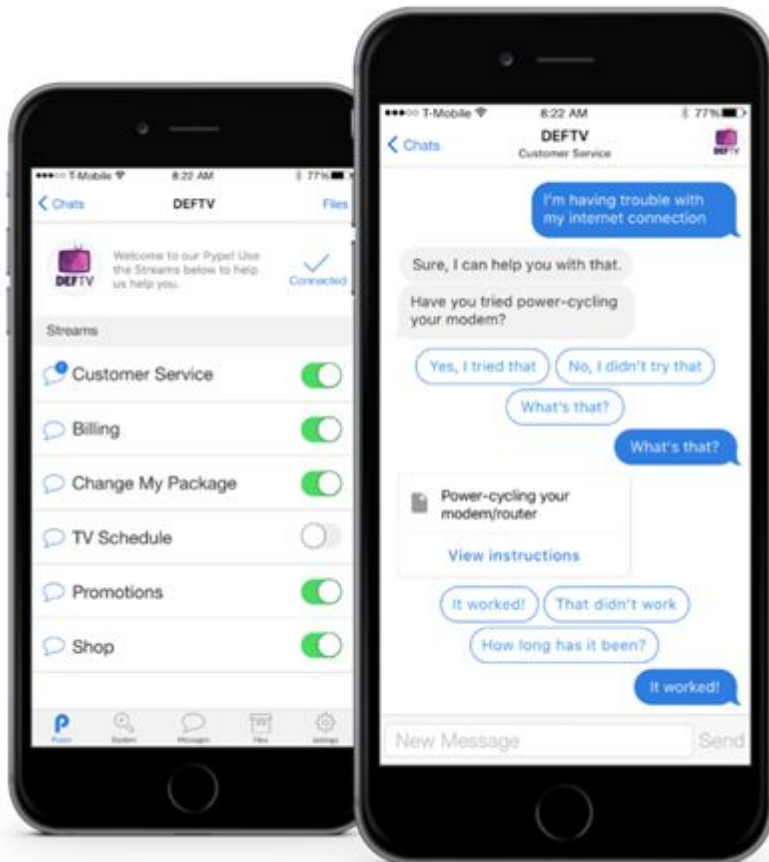
### A4. What types of content delivery are your customers asking you to provide?

<http://www.dclab.com/resources/press-releases/survey-following-the-trends-is-your-content-ready>



## A5. A.I needs to mature before it can replace customer service agents.

<http://venturebeat.com/2016/07/22/a-i-needs-to-mature-before-it-can-replace-customer-service-agents/>



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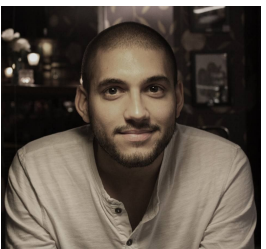
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