



## MOBILE TECHNOLOGIES IN LOGISTIC CUSTOMER SERVICE AS A TOOL FOR WINNING CUSTOMERS' SATISFACTION

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**ABSTRACT. Background:** The extremely demanding and dynamic situation on the 21st-century market along with market trends such as globalization, product unification or the development of e-commerce and m-commerce make it harder for businesses to compete and lead to greater deployment of technologies. As customers' expectations rise to an unbelievable level, all firms are searching for new means to succeed. Therefore, the aim of this paper is to present the importance of mobile technologies in logistics customer service and boosting customers' satisfaction in the form of a two-perspective judgement concerning both the supplier and the end client.

**Methods:** In order to acquire the dual perspective, the research includes two interviews with different companies from one supply chain and a survey. Both interviews were structured so as to compare each business's comprehension of the importance of mobile technologies in the logistics supply chain. The survey was conducted among randomly chosen customers aged 20-30, who mostly use mobile technologies while shopping (gived their share in the number of m-commerce customers). This approach made the survey results realistic.

**Results:** The results show an undoubtable synergy effect of the conscious use of mobile technologies in each linkin the supply chain. Moreover, the study confirms the growing popularity of this solution, as well as its contribution to constantly improving logistics customer service in terms of time, reliability, communication and comfort.

**Conclusions:** Based on the study, the high level of general customers' satisfaction of mobile technologies is incontestable proof of their overall benefits. Therefore, mobile technologies can be the key to gaining or keeping customers in the 21st-century marketplace.

**Key words:** Mobile technologies, logistics customer service, satisfaction, omnichanneling.

### INTRODUCTION

There is no doubt that 21st-century customers are accustomed to finding any product they need on the market in a very short time, and that firms make huge efforts to live up to their expectations. The problem is that making the product accessible is no longer the issue, nor is the time or place of delivery. Now, the key is to make it possible and easy for the customer to decide how they want to choose the product, pay for it, collect it (and return if needed) and for firms to be able to carry out the whole process relatively easily. This was one of the main reasons for the development of omnichanneling, which has now become

a standard, so much so that clients may be unpleasantly surprised when they are left with only a few options for delivery or for returning a product.

The relevance of omnichanneling is also a consequence of the fast development of e-commerce and m-commerce around the world. In the year 2000 the number of Internet users was 415 million, while by 2017 the number had risen to 3.7 billion people [Mobirank 2017], so compared to 7% of people having access to the Internet in 2000, it is now half of the world population and this figure is still increasing. Therefore, new human resources and processes are necessary in order to deal with the huge number of customers who not

only buy via Internet, but also search for information and need assistance.

What is more, it always depends on the kind of the product. If it is not designed or produced to a special order, the product usually does not really differ from a competitor's, because there is no problem for the rivals to imitate them [Grant 2010]. There are two main reasons for this: globalisation and product unification. Hence, if there is no possibility to compete by modifying the product or by manipulating the price, competitors should resort to other elements of the marketing mix, such as distribution or customer service. The most fascinating aspect of perfect customer service is that each customer wants to be served in a different way, and all these ways must be perfect. That is why all members of the supply chain must cooperate to ensure the customer's needs are met. However the market is dealing with a very high level of competition – supply chain vs. supply chain competition. What is even more problematic about this fact is that many companies are members of more than one supply chain, so this competition takes on the form of web vs. web competition.

All these observations lead to one significant challenge for the supply chains: they must improve their customer service in order to make it enough flexible and reactive to each situation. However high the costs may be, it is now the only possible way to keep up with the markets' expectations. That is why new solutions appear on the market, and mobile technologies are a perfect example of this. Their universal character makes them an excellent tool for each sector and they unquestionably let firms gain a competitive advantage, which is worth the investment. Unfortunately, the literature does not describe this problem sufficiently, usually demonstrating only one perspective. Therefore, in this article the dual perspective of one supply chain is described.

## **LOGISTICS CUSTOMER SERVICE – DEFINITION AND AIM**

In order to understand the role of logistics customer service, customer service in general

has to be explained. What definitely needs to be highlighted is the complex character of customer service. It consists of many small elements which have an effect on each other and are divided into three groups: pre-transactional, transactional and post-transactional [Melović et al. 2015]. This fact indicates that customer service not only concerns the act of buying and selling itself, but also the preparation for this transaction and all the activities which take place after it, including returns or after-sales service.

Then, there is the clue to customer service: it concerns delivering the product physically to a final customer, which is the aim of logistics, but also about proceeding with this in a way that awes the customer, which is rather the issue of marketing. This means understanding customer service as starting with the customer's real needs and finishing with their satisfaction: first, clients' needs must be understood, then interpreted and fulfilled in the best possible way.

This leads to an observation that customer service includes many factors which are extremely difficult to measure, such as consumers' needs and desires, which may be voiced out loud, but are not necessarily truly and fully matched with consumers' real and exact feelings. Concerning the definition and the understanding of logistics customer service, its aim may be described as delivering a specified quality level of all its elements and added value in the most effective way, reaching the highest possible level of customer satisfaction at the same time.

So, taking into consideration the fact that logistics customer service is a sequence of activities with an aim to be measured, it is time to call it a process and invent measures which will fully describe whether the aim is achieved or not. But when satisfaction is one of the most difficult notions to be defined, the only way to measure it is either to monitor the general level of satisfaction on a scale or to distinguish some components of it which may be easier to present. A good solution to this is to reach for a definition of logistics reduced to a 9R rule which, as described by different authors, differs slightly in some details, but generally focuses on the adjective "right" and refers to

the place and time and way of delivery [Wilson et al., 2013]. This rule indicates certain areas which must be perfected, such as time, reliability, communication and comfort and which are far easier to measure. Therefore, these four areas are used in a satisfaction measurement in research described by this paper.

## MOBILE TECHNOLOGIES IN LOGISTICS CUSTOMER SERVICE

Mobile technologies are becoming more and more popular in customers' everyday shopping experiences. Whenever an Internet connection is available and the customer has their mobile device turned on, the whole shopping process and even all what happens before and after the purchase can be carried out using mobile technologies. Having this in mind, a complete revolution in the shopping decision process is no longer in any doubt. Now, when the technology affects every step of it, the process is no longer a linear sequence of activities but rather continuous than discrete [Faulds et al., 2017] which means that customers jump from online to offline and the steps of the process are inverted, appearing in a different sequence and more than once.

There are many different types of mobile technologies available to customers. However, they exist for different reasons and fulfil various needs. They supply the user with information, they act as a kind of an advertisement for a brand or they simply make the purchase more customer-friendly. What is more, some of these technologies are used in companies in order to improve the processes, while others are designed for customers and are more even fun than useful.

For the purposes of this paper and this research, four different mobile technologies have been chosen - RFID, QR codes, geolocation and BLIK. The reason for choosing these particular mobile technologies is that they all contribute to the improvement of four areas of logistics customer service (time, reliability, communication and comfort) and three main flows in supply chains: materials, money and information.

QR codes have already been known for more than two decades, but their popularity grew incredibly when this technology became available not only to companies, but also the customers. Initially, they were used usually in warehouses in order to simplify the way the product flow is organized, but they are now widely used by detail retailers. QR codes are the successors of barcodes, because they can carry much more information.

A QR code is a matrix (a white square with black shapes) which can be read by a QR scanner or a camera in a smartphone [Ashford 2010].



Source: <https://www.qrstuff.com/>, 11/30/2018

Fig. 1. QR code

Although the QR code is a two-dimensional code, its area is limited by three squares at the corners, which help the scanner put the code in a specific position and read the information correctly and what is more, thanks to a special algorithm, the code can be read even when slightly damaged [Cheremkhin et al. 2017].

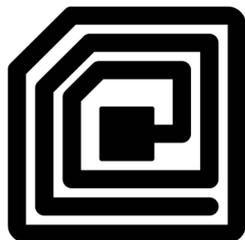
One of the biggest advantages of QR codes is their utility regardless of the branch. Among information hidden in QR codes such data as website addresses, contact information or product details is found [Cheremkhin et al. 2017], which make it easier to find the information needed at every point of the purchase process. However, QR codes are also a good advertising solution, a good example of which being the HBO campaign in which a special QR code was created to advert a new TV series "True Blood".



Source: <https://www.ashworthcreative.com/wp-content/uploads/2011/07/hbotruebloodqr.png>, 11/30/2018

Fig. 2. "True blood" QR code – advertising campaign of and HBO TV series

However, as technology progresses further, improvements appear very quickly. Therefore, there is another type of code which also enables the user to obtain a great deal of information of the object tagged with the code – the RFID technology. RFID is a short form of Radio Frequency Identification and is used for automatic object identification based on reading or writing the data in RFID tags using radio signals in RFID scanners [Lanko et al., 2018].



Source: <https://png.icons8.com/metro/540/rfid-tag.png> (12/29/2018)

Fig. 3. 3 RFID tag

The advantages of using RFID are similar to those for QR codes. This technology can be used in almost every sector and not only in retail, but for example, in new car parking solutions, which simplifies the process for the client (in this case, drivers). Furthermore, the aim is to make the process more reliable. Moreover, RFID technology allows the retailer to supply clients with personalised information the minute they enter the store, making it similar to online shopping, where multiple additional links and information are available [Landmark, Sjøbakk, 2017]. This may be extremely important in the times of today's

shopping process, which is based on online to offline hopping.

What is more, there is no doubt that consumers live in a constant buzz and they pay little attention to the information they find in their environment. What makes things even worse is the fact that being surrounded by so much information, the client demands real value in it, otherwise they skip it as soon as possible and easily forget. That is why companies have to make a huge effort to get straight to the right customer. Therefore, they use geolocation, a technology basing on a GPS signal which allows for sending information about a promotion to a client's smartphone just when he or she appears nearby the shop. The aim isto influence the client's behaviour and emotions and persuade them to buy. What differentiates this information is that a client interested in it has to agree to receive messages. The best advantage of geolocation is that it makes it possible to reach the client at the right time and place (either the district or area near a specific building, depending on the kind of geolocation), so that just after receiving the information, the client can enter the shop and spend money. Even though geolocation does not work in closed areas like shopping malls, other technologies have also appeared, like iBeacon, which is no longer based on the GPS signal, and therefore may also be used inside a building [Rezazadeh et al. 2018].

Last but not least, there are mobile technologies which simplify the process of payment for shopping. Although paying with the use of debit and credit payment cards is definitely customer-friendly, in 2015 it became even easier, as the customer does not need anything more but their mobile device (usually a mobile phone) with a BLIK system installed. By the end of 2017, 9 banks had already begun participating in this project [Folwarski, 2018]. Payments through the BLIK system are based on a mobile banking application, which has to be installed on the mobile device. However, the number of customers using mobile banking is increasing (from 3.14 million people in 2015 up to more than 3.5 million in 2017).

BLIK is a relatively easy tool. When choosing BLIK as a method of payment for shopping, the customer needs to generate

a disposable 6-digit code and write it on the payment terminal in the shop. What is more, BLIK may also be used to withdraw money from the ATM, to transfer an amount of money to another person, or to purchase tickets in ticket machines in buses.

## RESEARCH METHODOLOGY

The study has been divided into two parts in order to obtain the most appropriate data possible and a dual perspective. The aim of each part was to obtain information about the respondents' level of knowledge concerning mobile technologies, the point up to which they use any of them, as well as their opinions about each technology concerning time, reliability, communication and comfort compared to their general satisfaction.

Firstly, qualitative research has been conducted in companies which have specific mobile technologies. As assumed, the form of research (being individual structured interviews) allows a detailed picture to be created of the impact of mobile technologies on supply chain processes (especially the logistics customer service process). Therefore, two companies (which cooperate closely) from one supply chain have been chosen in order to produce a description from two points of view. Moreover, such an action enables the researcher to make a comparative analysis.

The research focuses on companies which know and use RFID technology, although a few other technologies were also mentioned during interviews. During spring 2018, two individual interviews took place, one of them with the Director of the Decathlon Warehouse in Lodz and the second with the Director of the Decathlon retail shop in Lodz.

Decathlon is a French network of sports shops which operates globally and, on average, its turnover rises by 0.5 million euro each year. I product range includes over 20 brands, which are differentiated by the sports discipline they are dedicated for. In 2018 in Lodz, there are 3 retail shops and 1 newly build warehouse of this company.

Both interviews were structured in the same way. First, the respondent was asked about his understanding of logistics customer service

and about the kinds of mobile technologies used in his company. Detailed questions followed. The researcher asked for the respondents' feelings about the technologies mentioned with regard to four areas: time, reliability, communication and comfort. Also, respondents were asked about other mobile technologies that are a part of their systems.

For the second part of the research, a survey, it was decided that a web poll would produce the most reliable data. Therefore, a web questionnaire was created and distributed among students' groups via the Internet. The number of questions depended on the respondents' familiarity with mobile technologies: detailed questions about each technology appeared only if the respondent answered "yes" to the previous ones, the larger amount being 4 for each technology.

In this case, 3 mobile technologies were selected: QR codes, geolocation and BLIK. First, the clients were asked if they know any of the technologies mentioned. If not, the survey was ended. If they were familiar with some of the technologies, they were asked to answer several more questions in which they graded technologies in four areas, as was done by Decathlon workers with RFID in the interviews.

When it comes to the web survey respondents themselves, there were no strict regulations regarding the ideal client. In fact, the questionnaire could be completed by every person who does shopping, because only those could be users of these specific mobile technologies. Even the questionnaires from clients who didn't know any of the technologies were taken into consideration, because one of the detailed aims of the survey was to check whether each technology is known or not. The survey resulted in 10.16% questionnaires being returned.

## RESEARCH RESULTS - INTERVIEWS

As supposed, the interview results made it possible to perform a comparative analysis. The most striking fact for both comments was that each company treats logistics customer service rather comprehensively. What makes

the process so crucial is that the supply chain has to service the client in the best possible way, regardless of who the client really is. For the shop, the clients are distinguished by their needs, but for the warehouse, it is also a question of whether it is an individual web customer or a retail shop, as both need to be served well, even though the service is completely different. For both companies, the aim of the process is for it to be run smoothly and quickly, so as to let the clients receive their orders as and when they want. Additionally, the warehouse tries to reduce the time the shop loses on working with the product in order to let the shop workers focus on customers, which is a question of seeing greater value in people rather than in products.

When asked about mobile technologies used in their logistics customer service, both directors mention RFID as a core technology in their companies, and even if in the shop it is part of each activity in the process, in the warehouse it is still an auxiliary tool. The logistics customer service in the warehouse uses it mainly for stocktaking or quality check, but in the near future Decathlon is to launch a project called "100% RFID", which will be based on this technology. The important point here is that RFID is present in every single link of this supply chain, beginning with production up to returns. This leads to the whole Decathlon chain's aim of having non-stop control over the product flow.

When it comes to effectiveness, the warehouse admits that RFID helps in measuring the time needed for each order to be completed. As for the shop, this technology is more of a help in validating data in the system with what is actually in the store. However, the shop's director agrees that the time spent at the checkout is incomparable when the goods are scanned with RFID and not manually. Moreover, it has some added value for the client, who hardly ever underestimates how little time the cashier needs to complete the shopping. Therefore, both the warehouse and the shop benefit from the time reduction gained with RFID.

As was said before, the aim of Decathlon's supply chain is to have control over where each product is at every moment. Therefore,

the use of RFID technology makes an extreme rise in the certainty of delivering the right product to the right customer (whether it is a final consumer or the retail shop). What is more, the shop's director indicates that it is usually the human who is the source of errors, not the technology itself.

When it comes to the area of communication, some differences appear. In the warehouse, communication with the suppliers doesn't really exist because Decathlon produces and sells its own products. However, there is a kind of communication between the warehouse and the shop being planned in the "100% RFID" project: RFID is going to be responsible for changes in product status (from: "in a warehouse" into "in a shop"). Furthermore, RFID is present in the process of managing returns in which all information about the mistakes appears automatically in the warehouse right after being discovered in the shop. More cooperation in this area is predicted in future.

In the shop, the communication is on another level, as it takes the form of human-to-human dialogue. Workers use RFID to find any information needed for the client in very little time ("fast shop"). The RFID tag contains not only information about the price, but also technical information or even other users' opinions. In addition, in the future, shops will use RFID in fitting rooms so as to help customers who shop alone. RFID will create a possibility for them to get another size of a T-shirt they are trying on by sending a message to a worker and letting him bring a desired piece of clothing. As an interesting fact, the shop director mentioned the size of RFID tags, which are not relatively big by accident or by technical constraints. Decathlon customers are supposed to see the technology being used and to understand that it is user-friendly, and, ultimately, to use it.

Summing up all the above, both directors agreed that RFID technology makes managing a company far more convenient, mostly by reducing unnecessary actions such as manual scanning at the checkout, making the data a lot more reliable and minimizing the stress of making a mistake, which would be difficult to rectify. What is more, all the ways of using

RFID described here seem relatively uncomplicated for staff and customers alike.

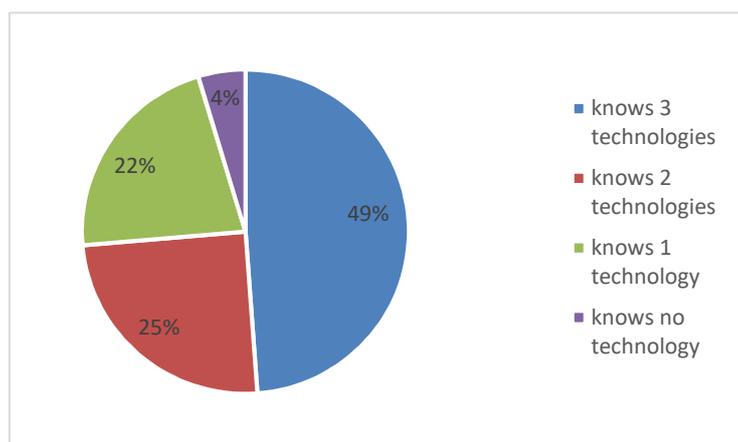
Among the other mobile technologies mentioned by respondents are the mobile version of SAP (applicable for tablets), BLIK (used for paying by clients rather than cash) and even mobile versions of the Decathlon website. However, they did not seem significant enough for the Directors in relation to RFID, which can definitely be described as the heart of the Decathlon supply chain.

Nevertheless, both directors noticed the huge power of mobile shopping. They admit that their Polish supply chain is not sufficiently prepared for it, but in other countries, the Decathlon mobile platform manages the number of orders with a high level of consumer satisfaction. Therefore, steps are being taken to live up to other countries and

make the Polish supply chain develop by following the market trends.

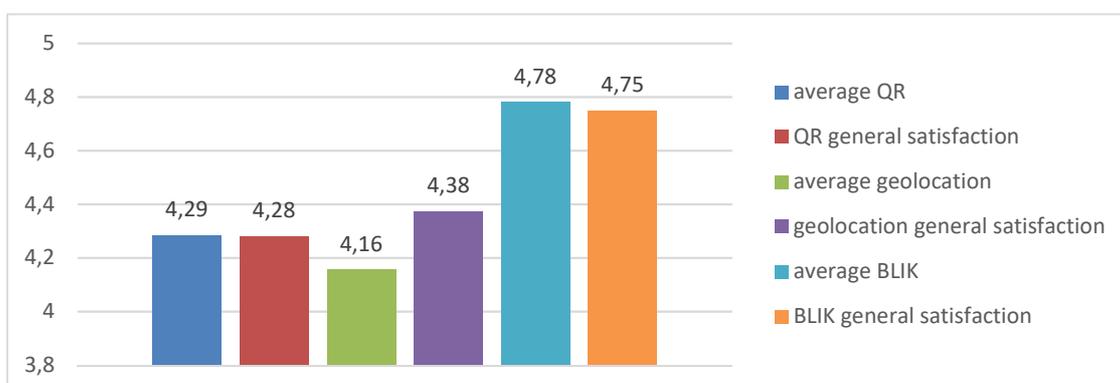
## RESEARCH RESULTS – SURVEY

The aim of the second part of this research was to obtain a detailed picture of mobile technology users' satisfaction concerning their use of this solution. As was mentioned before, the group of respondents consisted mostly of customers aged 20-30 (75%), who (thanks to their age, financial abilities and good knowledge of mobile solutions) are believed to know and use mobile technologies most often of all consumers on the market. The survey questions were concentrated on the use of mobile technologies during shopping. In order to make the results comparable with those of the first part, these questions also concerned time, reliability, communication and comfort.



Source: own study

Fig. 4. Consumers' knowledge of mobile technologies



Source: own study

Fig. 5. Mobile technologies estimation

Judging by the results, it may be stated that mobile technologies are quite popular. It appears that almost three quarters of the respondents (74%) know at least two of the technologies chosen for the poll. What is more, only 5% of the respondents do not know any of the technologies they were asked about. A more detailed analysis shows that most respondents know BLIK (almost 90%), which is a rise comparing to previous years.

In the poll, respondents were asked to describe their satisfaction with using each mobile technology, where 1 meant "not satisfactory at all" and 5 stood for "extremely satisfactory". What is important to note is that they were first supposed to give the notes considering each area (including time, reliability, communication and comfort) and then, a second independent note which described their general feelings about each mobile technology. The average results of the poll are presented in Figure 5.

It may be said that, in general, customers have a positive attitude towards mobile technologies and rate them highly. What is more, even though they tend to be tougher when estimating specific areas, their overall satisfaction is rather on the same level or even higher. This means that despite having some points to be upgraded, mobile technologies still serve their purpose. This leads to the conclusion that the question is not whether mobile technologies should be widely implemented or not, it is rather about improving them according to specific consumers' needs and expectations.

## CONCLUSIONS

All the observations should make it clear to managers that logistics customer service is about creating a most suitable mix of logistics activities and marketing secrets. Undoubtedly, in the market conditions of the 21st century it is logistics customer service that can either bring new customers or keep old ones from changing the supplier. However, when the whole market goes mobile, it is crucial not to be left behind and that is the reason for implementing mobile technologies. Judging by

the research results, these technologies are becoming more and more popular and generate at least satisfactory effects.

Last but not least, it is important to note that human resources, even if in some cases irreplaceable, are also limited and very likely to be a source of mistakes. At this point, technology appears with its 'super power' of being infallible (or at least almost perfect), which makes it possible to obtain more specific data and thus more insightful information about the customers.

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## TECHNOLOGIE MOBILNE W OBSŁUDZE LOGISTYCZNEJ KLIENTA JAKO NARZĘDZIE ZWIĘKSZAJĄCE SATYSFAKCJĘ KLIENTÓW

**STRESZCZENIE. Wstęp:** Niezwykle wymagająca i dynamiczna sytuacja na rynku XXI w., podobnie jak pojawiające się trendy takie jak globalizacja, unifikacja produktów czy rozwój e-commerce i m-commerce sprawiają, że przedsiębiorstwom jest trudno konkurować i tym samym prowadzą do wyższego wykorzystania technologii. Podczas gdy oczekiwania konsumentów są znaczne, wszystkie firmy szukają nowych sposobów na odniesienie sukcesu. Dlatego też celem tego artykułu jest prezentacja istotności technologii mobilnych w logistycznej obsłudze klienta i zyskaniu satysfakcji konsumenta, dokonana z perspektywy zarówno dostawcy jak i finalnego klienta.

**Metody:** W celu uzyskania podwójnej perspektywy, badanie obejmowało dwa wywiady z różnymi ogniwami jednego łańcucha dostaw oraz badanie ankietowe. Co ważne, obydwie wywiady miały określoną strukturę, która umożliwiła porównanie sposobu pojmowania istotności technologii mobilnych w logistycznej obsłudze klienta przez każdą z firm. Ankieta została natomiast przeprowadzona pośród przypadkowo wybranych konsumentów w wieku 20-30 lat, których uznano za najczęstszych (ze względu na ich udział w grupie m-konsumentów) użytkowników technologii mobilnych podczas zakupów, co pozwoliło na urealnienie wyników badania.

**Wyniki:** Otrzymane rezultaty ukazują niezaprzeczalnie efekt synergii uzyskany dzięki świadomemu wykorzystywaniu technologii mobilnych przez każde z ogniw łańcucha dostaw. Co więcej, badanie potwierdziło rosnącą popularność takiego rozwiązania oraz jego wpływ na doskonalenie logistycznej obsługi klienta w obszarze czasu, niezawodności, komunikacji i wygody.

**Wnioski:** Na podstawie badania można stwierdzić, że wysoki poziom satysfakcji ogólnej konsumentów z technologii mobilnych jest niepodważalnym dowodem ogólnych korzyści z nich płynących. Dlatego też technologie mobilne mogą być kluczem do zyskania lub zatrzymania konsumentów rynku XXI w.

**Słowa kluczowe:** technologie mobilne, logistyczna obsługa klienta, satysfakcja, omnichanneling

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