

Big Data in Finance: Ethical Challenges

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Along with the advent of the Internet, the volume of generated and stored data began to grow at an unprecedented rate. Until now, technological limitations have prevented any efficient analysis of this data over any given time. It is only during the past few years that we have seen the emergence of tools that can harness Big Data to produce accurate results in just a few seconds. Today, the subject of data exploitation has come to the fore. This phenomenon has been referred to as Big Data. It affords tremendous growth opportunities but also raises controversial questions about privacy. The current situation favours the business community, which may lead to data misuse and unethical conduct in the financial sector. This industry is grounded on trust and ethical concerns are invariably given precedence. Bearing that

in mind, special attention should be paid to the most sensitive social issues, in particular data protection.

The phenomenon of Big Data

Every day people generate an abundance of information about themselves, their behaviour and their interests. On an average morning you fire up your Internet browser and open a website. During the milliseconds that pass between clicking on a link and the desired content being displayed on the website, amazing things take place, leaving a lasting footprint in the virtual space. The data created during this browsing routine is transferred to a dozen different companies. Almost immediately, any interested financial institutions are capable of observing your activity (Madrigal, 2012).

Le terme Big Data se réfère aux grands volumes de données structurées aussi bien que non-structurées. Le Big Data est généré par un flux continu de données que crée l'économie moderne. Elles proviennent des interactions sociales, des équipements mobiles, de la R&D, des infrastructures IT et de tout équipement de transmission de données. Le Big Data comprend des données aux structures différentes, repose sur la haute vitesse de création de données et la capacité de dégager de l'information fiable. Ce concept apparaît dans de nombreux contextes: l'analyse des énormes volumes de données, les médias sociaux, la gestion des données sur les générations futures, la gestion en temps réel etc.

L'industrie financière cherche des nouvelles solutions en matière de gestion des données, tout comme les géants du secteur IT, Google ou Microsoft. L'industrie bancaire aussi pour obtenir des profils de client toujours plus précis.

Big Data is a new concept and defining it is key in analysing the behaviour of financial institutions dealing with data. The term refers to a large volume of data, yet the specific volume of qualifying data remains to be delimited by institutions investigating the phenomenon. Most definitions highlight a data set of indefinite size that cannot as yet be processed by the hardware and software used for such purposes.

Traditionally, the term "Big Data" was used to describe the huge volumes of data analysed by large organizations, such as Google, or for research projects carried out by organisations such as NASA (Merv, 2011, p. 3). Today, Big Data is mainly understood as a set of data stream generated by the modern economy and comprising data produced during social interaction, by mobile devices, R&D, simulations, IT infrastructure, and other equipment and tools that handle data transmission (Vasset, 2012, p. 1).

Birst defines Big Data strategies as those which extensively utilize parallel and specialized systems to extract and take advantage of the knowledge hidden under the surface of dispersed and unstructured data. They transform whole industries, create winners and attract those who follow them (Birst, 2012, p. 2).

Big Data is a large-volume data collection possessing a varied structure, fast data creation speed, and the ability to generate reliable information. Big Data is ubiquitous and yet the concept sows confusion.

This term accommodates a number of concepts: a huge amount of data; analysis of social media; future generation data management; real-time management; and much more. Whatever is included in the Big Data label, organisations are beginning to understand and discover how to process and analyse information sets in an unprecedented manner. In this way, a small but growing group of pioneers is able to deliver incredible business results (IBM, 2012, p. 1).

New possibilities in the world of finance

All sectors and industries are keen to make the most of the opportunities which arise from the advanced analysis of Big Data. Besides market leaders such as IT giants Google and Microsoft, the financial industry is also seeking new data solutions, both locally and globally. Within the Polish market alone, there are several players who are increasingly toying with the idea of framing policies which enable the use of Big Data. The banking industry is looking for new solutions and models which will enable the construction of a more accurate customer profile. Depending on the organisation, this involves the exploitation of its own or external data or even the sale of aggregate information about customers' purchasing habits to other organisations. These methods are expected to help develop better contributions and enhance customer credibility. However, it is easy to cross the fine line of financial ethics and abuse data.

Les institutions financières détiennent d'importants volumes de données sur les comportements d'achats de leurs clients de même que de l'information sensible sur leur situation financière. Leur défi consiste à trouver plus d'information spatiale et sur le comportement on-line. Selon la Conférence organisée par The Economist en 2013, l'industrie financière est parmi celles qui ont le plus de bénéfices à tirer du Big Data. Toutes les institutions financières qui exploitent du Big Data agissent dans le cadre de la loi. Toutefois, les règles et réglementations actuelles datent d'il y a au moins 10 ans et ne protègent plus la sphère privée à l'heure du monde virtuel.

La vente de données sur le comportement d'achat des clients est aujourd'hui une activité importante pour l'industrie financière. Les grandes banques et les émetteurs de cartes de crédit sont en bonne position pour récolter de telles données. Ainsi, un service

Financial institutions store large volumes of their own data regarding customers' purchasing behaviours, and even more sensitive data on their financial position. Obtaining further information on their location and online activity is straightforward. When comparing the situation of banks to that of other organisations, the former enjoy a far more privileged position. There is no other institution that can create such an extensive customer profile, as they have no access to information about the customer's general behaviour in the market and their financial status. After collecting more data, banks can benefit in the same way as other data-gathering companies. All that is required to obtain a desired data set is a) any location information received via the mobile banking app and b) the customer's approval for the bank to access social networking sites in return for a more profitable deal for the customer.

Business leaders in different sectors are now asking themselves how they can benefit from their data resources in a more effective way. McKinsey points to the banking sector as experiencing the highest data intensity (Manyika, 2011, pp. 15-26). In June 2013, programmers, analysts and CEOs gathered in San Francisco at a conference on Big Data, Ideas Economy: Information Forum 2013, and concluded that the banking industry is among the leading sectors that can reap the benefits of Big Data. They emphasised that banks were receiving large amounts of un-

structured data that had never had any real value before. For example, millions of telephone conversations with customers yield millions of useful pieces of data. Today, telephone calls are a key tool in helping banks implement new strategies aimed to significantly reduce the number of complaints (The Economist, 2013).

All financial institutions exploiting Big Data act in accordance with the law; however, the current rules and regulations were laid down more than ten years ago and are ineffective at safeguarding privacy in the virtual world. The regulations on data protection currently in force date back to 1995. Significantly, at that time only 1% of the European population used the Internet. The world has changed dramatically and the law must keep pace. Legislators apparently fall behind technological progress and some institutions decide to take advantage of this. However, it is vitally important that the financial industry looks to foster public trust. The global crisis of 2008 has eroded that trust, so banking institutions can no longer afford to act riskily.

Data as a commodity

Selling data on customers' purchasing habits is becoming critical in the financial industry. Large banks and credit card issuers are very well positioned to gather such information. A bank-administered Internet service provides access to multiple online transactions; any data gathered in such activity is pro-

internet administré par une banque lui donne accès aux transactions en ligne. Toutes les données ainsi obtenues sont utilisées pour dégager des profils de consommation. L'une des grandes banques britanniques, avec 13 millions de clients, fait du commerce de données un élément important de sa stratégie. Dans une note émanant de l'institution, il est question de combiner les données client pour obtenir des rapports intéressants pour des tiers. La banque a, par la même occasion, spécifié l'information qu'elle détenait et la façon dont elle entendait protéger la sphère privée. Les données ne se limitent pas aux transactions réalisées payées en ligne ou par transfert, mais contiennent des images, des conversations téléphoniques et des profils des visites du site bancaire.

Un projet bancaire lancé en Pologne en 2013 offre un programme promotionnel personnalisé de transactions bancaires accessibles via une application

cessed and used to establish consumer behaviour patterns. This helps with strategic planning. Credit card issuers have the right to license third-party access to data in order to extract any desired values. However, such third parties are increasingly shifting their focus to data analysis. The consultants of one of such analytical business analyse 65 billion transactions completed by 1.5 billion credit card users in 210 countries to investigate consumer trends. Any information obtained in this way is sold on. For example, it was observed that customers buying petrol for their vehicles at around 4:00pm are very likely to spend between 35 and 50 USD at the grocer's or in a restaurant during the hour following the transaction. Marketers can use this knowledge to issue discount vouchers for a nearby supermarket, thus pushing up its afternoon sales. As intermediaries in the flow of information, credit card issuers gather the most data and capitalise significantly more highly on its value than other similar institutions. In the future, they might be willing to give up their commission on credit card transactions for the sale of complex analysis, based on data provided by credit card users (Kearns, 2011).

The strategy of one of Britain's largest banks with a customer base of almost 13 million also puts much pressure on data trading. In mid-2013, the bank representatives informed their customers about the intention to sell data on their shop-

ping habits. An official note published by the institution communicated that there were options of combining customer data, creating reports and sharing them with external organizations. The bank also revealed the type of customer data it holds, at the same time respecting customer privacy. Such data does not only contain the details of completed purchases paid by a wired transfer or credit card, but also customers' profiles containing images, records of telephone conversations, or browsing patterns in the bank's main website. The bank argues that its new strategy is fully in line with the law and that no customer's personal data will be disclosed outside the bank without the customer's approval. The bank's partners will be provided information, such as which customers frequent shopping centres at which times, and how and what they buy. The bank does not exclude the transfer of the information both to commercial partners and to the government. The newly adopted policy of data trading was introduced in 2013. This is the first bank in Europe which openly informs its customers that it has been gathering and using their data and intends to share it with its business partners, of course, in accordance with the law (Samcik, 2013; Samcik, 2013b). This begs the question of whether such activities are ethical.

The Polish market also provides an example of the use of customer data by companies involved in a pro-

Facebook.

La banque n'est pas loquace sur la collecte et le traitement des données: dans sa spécification transparait toutefois le recours au Big Data et le transfert des données clients aux tiers.

Son activité principale consiste à proposer aux clients des programmes discount adaptés aux préférences personnelles telles qu'elles ressortent des données sur les comportements d'achat.

Ainsi, la banque se prépare à l'utilisation du Big Data à une plus large échelle. L'accès à son programme d'offres passe par une application Facebook, ce qui permet à la banque de collecter d'autres données sur l'utilisateur. Quand il passe par Facebook, l'utilisateur exprime son accord pour le traitement et l'analyse des données. A partir de ces informations complémentaires, il sera encore plus facile à la banque de créer des profils encore plus fins.

La direction d'une des grandes banques polonaises espère pouvoir attirer dans un avenir

project sponsored by one of the banks. The scale of the data interchange is less impressive as the bank declares that the data is shared only within the framework of the project, which was launched in 2013. The project offers a programme of specially customized promotions available in the bank transaction service and via a Facebook application. The bank does not talk much about collecting and processing the data: its regulation highlights the project specifications which reveal the use of Big Data and the transfer of customer data to bank's partners. Its main activity is confined to providing customers with personalized discount programmes reflecting their preferences and exploiting information about customers' buying habits. The recipients of the discounts are targeted based on a group analysis, and data on individual customers is not shared with any partners offering discounts. The information shared concerns the buying behaviours of a specific group of a particular size, so that the partner can estimate the benefits of running the promotion. However, this is likely to be true of potential partners only. The regulation of the bank includes a provision to the effect that when agreeing to participate in the programme, the customer agrees to share information about a transaction with the bank's partner. Such information remains a bank secret. After that, the partner, whose offer was accepted by the customer, can calculate their benefit. Despite this,

the bank declares that it strictly abides by the regulation that prohibits the use of data gathered under the programme for other companies' marketing purposes. Additional protection of personal data is provided via a confidentiality agreement covering the arrangements with a specific partner during the campaign. The bank explains that the programme follows the same rules as any other traditional banking procedure, and that banking law regulates the use of customer data very precisely. When submitting their application, the customer agrees to the use of part of their data to analyse their creditworthiness. However, the offer will be made only to those customers who have given their consent. The programme is a novelty in the European market. The bank informs its customer who buys fuel at a BP station that they can expect a discount from a rival fuel provider in the near future. Big Data is thus used to combine the interest of product and service providers and customers who make their purchases and generate additional profit for the bank. It should also be noted that the bank is preparing to use Big Data solutions on a larger scale: it offers access to the programme via a dedicated Facebook application, which means that it can collect yet more data about its customers. When using the application, the customer agrees to their Facebook data being accessed and analysed. Having such additional data at hand, the bank will be in

proche une nouvelle clientèle grâce à une offre hypothécaire compétitive, mais avant tout grâce à l'exploitation de l'information sur les clients potentiels. En 2013, la banque avait 7.1 millions de clients. Aujourd'hui cette banque voit dans le Big Data une tendance de fond du développement du secteur bancaire.

Le recours au Big Data extrait du monde digital, par des petites institutions du shadow banking, est un phénomène nouveau. Leur capital initial est dérisoire (1500 USD). Pour apprécier la solvabilité du client, ils utilisent les données des médias sociaux. Ces institutions entendent offrir des prêts instantanés en ligne. La décision de crédit est prise en moins de 10 minutes. La solvabilité est appréciée automatiquement par un programme qui explore plus de 8000 éléments d'informations sur le débiteur. Ces données ont extraites des sites comme Facebook, Twitter, LinkedIn, ou Goldenline.

a position to create even more detailed customer profiles (Samcik 2013c; Jeznach, 2013).

Detailed data analysis: a strategy of the 'big guns'

One of Poland's largest and most stable banks plans to catch up with the competition and is undergoing a considerable revision of its future policies. It intends to target customers via all possible channels. In the near future, the management hopes to attract clientèle by competitive mortgage rates and deposits, but first of all, by taking advantage of the information received about potential customers. The bank hopes to secure its financial position in the coming years by using Big Data and combining all customer information held by the bank to tailor and offer products that the customer most probably needs at a given time. The bank stores extensive customer information in its own database and, at this stage, it is focusing on making use of it. In 2013, the bank's customer base totalled 7.1 million. Today, the bank considers Big Data one of the key trends in the development of the banking sector. Proper use of data can drive up sales dramatically. Their elaborate CRM system is only a herald of the large-scale use of Big Data in banking. In its new policy, the bank assumes that all its customers will ultimately use at least one of its products, such as a loan, deposit, settlement account, investment fund or one of the insurances. The

staff will operate an IT tool capable of returning very detailed data on any customer in no more than just seconds: monthly transactions, surplus, the number of credit card transactions, purchasing habits, or other expenses. What Big Data will certainly be used for is diminishing the cost of borrowing risk to about 20% while increasing the sale of services (Samcik, 2013d).

Facebook information as a loan guarantor

A new phenomenon in the financial sector is shadow banks (quasi-banks), small financial businesses that are beginning to use Big Data and customer information obtained from the digital world. Their initial capital seldom exceeds PLN 5,000. These businesses use data from social networks in order to assess customer credibility. Their main business objective is to offer instant loans online and it takes no longer than ten minutes to decide whether to offer a loan or not. The borrower's solvency is tested by an automatic programme that has access to more than 8,000 pieces of customer information. This data is extracted from popular sites, such as Facebook, Twitter, LinkedIn, or Goldenline. The borrower's "friends" are also examined, with special regard paid to their social position and financial standing. This is enabled by granting temporary access to the customer's account, which the customer authorizes when submitting the application.

Un des vice-présidents de la banque a annoncé publiquement que son institution était la première dans la branche à combiner les données internes avec celles provenant des sources externes du web. La banque a l'intention de fusionner ces données avec celles provenant des sites sociaux et les données de télécommunication. Selon toute vraisemblance, une fois qu'une solution technique aura été trouvée, elle sera utilisée dans d'autres secteurs et industries. Après cette interview et l'esquisse de la stratégie d'exploitation du Big Data, les forums se sont mis en émoi avec une forte prédominance d'avis défavorables.

These institutions even inform the customer that their extensive networking will raise their borrowing capacity. The application is very easy to complete and its submission takes no more than a couple of minutes. The principle data required consists of the customer's state identity card number, mobile phone number, e-mail address, and some information about his/her life. Most probably, the system also checks the customer's online shopping habits in order to verify creditworthiness. The offer is intended for young people without any borrowing history and for those who need immediate access to cash and who cannot wait for the "traditional" procedure which takes up to several days. These establishments are advertised as reputable foreign players, observing any personal data protection requirements. How such organisations operate despite their initial lack of capital (sometimes not more than PLN 5,000) is baffling (Samcik, 2013e). We cannot expect that these organisations adhere to any standard of ethical conduct.

Hot atmosphere surrounding data analysis

TNamed one of the most innovative banks in the world and recognized in 2013 in the prestigious Infosys Finacle Global Banking Innovation Awards, BAI decided for the second time in a row to invest in Big Data solutions (BAI, 2013). One of the bank's VPs announced publi-

cly that his institution is the first in the industry to make Big Data one of the pillars of its 2013 strategy (TVN CNBC, 2013). He revealed that they were working on a Big Data project combining internal data and external data originating in various World Wide Web-related channels. The bank intends to merge the banking data with that obtained from social networking sites, which reflects a customer's online footprint, and data from telecommunications companies. Once the customer consents to having their data analysed, the bank promises such benefits as lower interest rates due to more accurate risk assessment. Prospectively, once an appropriate solution is designed, it will be implementable in other sectors and industries. The models will be extended by other data as it is likely that the access path will be similar.

After the interview with the VP and his outline of the strategy and plans involving Big Data, the Internet forums erupted. Haters immediately appeared critical about the idea: "A perfect illustration of what we know as total surveillance" (Lucek, 2013). There were also attempts to rebut the critics: "Folks, what is all the fuss about? On Facebook, you agree to share everything or almost everything" (Realista, 2013). Or, "I can't understand all this fuss. If you post personal information online, you must be aware that others will also have access to it" (Maciek, 2013). This heated debate proves how sensitive the subject is. This is

Le projet de l'industrie bancaire est de désagréger encore plus l'information sur sa clientèle. Cette intention est clairement affichée dans la plupart des conférences tenues depuis 2011. Les cas rapportés ici ne sont que des exemples de ce nouveau phénomène. Les banques autour de la planète mettent en place des stratégies utilisant le Big Data. Tout cela est légal, mais il est important de savoir à quel point le public en est conscient. En effet, pour que la banque puisse tirer tout le bénéfice du Big Data, il faut encore que le consommateur soit d'accord avec cette utilisation des données.

Notre ombre digitale est composée des données qui sont publiques, mais aussi de celles que nous préférons garder dans la sphère privée. Des études ont montré que seulement la moitié de notre empreinte digitale est faite des photos, des e-mails et des conversations en ligne. L'autre moitié de

also seen in recent scandals relating to insufficient data control on the Internet. Facebook is going through a crisis, and its users have often revolted against the exploitation of their data. Other large-scale examples are the Snowden affair and the PRISM spying scandal.

New practices in finance and public trust

The financial industry is planning to further break down customer data. This intent has been frequently reiterated in banking conferences since 2011. The cases mentioned above are but a few examples illustrating the nature of this new phenomenon. Banks around the world are implementing strategies involving the use of Big Data. This is all legal, yet it is interesting to consider the opinion and the degree of public awareness of the process. In order for the banking sector to reap the full benefits of Big Data, it is necessary to secure customers' consent to data sharing. Controversial as it may be, most of the population is unaware of the scale of the analysis and dissemination of their data.

A survey carried out for this paper among 145 Internet users aged 18-50 indicates that the public are generally against Big Data analysis by banking institutions. Surprisingly, the results were very similar across the entire age group. Half of those surveyed (50.79%) responded that the banks should not monitor customers, and maintained that using customer data obtained from

social networks to tailor the product to a customer's needs is outrageous. More than one-third were not able to express their view and had mixed feelings. Only 13.92% of the respondents agree that the analysis of customer data originating in social networks in order to design financial products and services is a good idea if the customers can somehow benefit from that.

The scale of the phenomenon

In order to illustrate the scale of data exploitation, we need to have a closer look at the user's online activity. The digital shadow covers every trace of our digital presence. In 2007, IDC developed the concept of digital shadow as a footprint left by the user on the Internet which accurately reflected their everyday habits (IDC 2007 pp. 7-8). This shadow is swelling faster and faster each year, usually without our knowledge. Our digital shadow is made up of information that can be considered public but also contains data that we would rather remain private (Gantz, Reinsel, 2011).

Studies have shown that only about half of the digital footprint refers to individual activities, e.g. taking pictures, sending e-mails, or making online calls. The other half of what is called the digital shadow refers to information about the person's name, financial record, names extracted from their mailing lists, web browsing history or images taken by CCTV cameras in airports

notre ombre digitale est faite de données personnelles telles que le nom, les données financières, les noms dans les listes de mailing, l'histoire des accès web et les images prises dans les aéroports, etc.

Aujourd'hui tout un chacun vit une double vie. Dans le monde réel, notre identité est validée par le numéro de passeport, du permis de conduire, par le nom et le prénom, etc. Dans le monde virtuel, chacun opère au travers des marqueurs appelés "biscuits" (cookies) qui décrivent les habitudes sur le net et qui créent son identité.

Si une institution financière peut tracer nos habitudes en ligne, dans le cas des technologies comme la TV ou le téléphone mobile, il est faux de dire que nous restons anonymes. L'utilisateur en ligne d'un compte bancaire peut être facilement identifié par l'adresse IP de son ordinateur; une fois cette identification réalisée, toute l'activité en ligne peut être tracée.

and city centres. The digital shadow has grown bigger than the digital information that can now be actively and personally transformed (IDC, 2007).

The digital footprint is analysed by a number of companies, including in the financial industry, so that advertising can be perfectly tailored to the needs of the potential customer. The advert is expressly placed at eye level, and any data gathered is added to the archive of the person browsing the website. There is no information about a data exchange centre. All such data allows advertisers to customise their message, and the digital feedback they get helps them see if the strategy actually works. To a greater or lesser extent, this process takes place at every website viewing. (Madrigal, 2012).

Control over own data

An accidentally created online profile can transform into something broader than originally intended by the user. The bad news is that people rarely supervise which of their personal data is collected and sold. In contemporary times, every person lives a double life. In the real world, they have their identity validated by the personal number (PESEL), passport and driving licence number, first and last name, etc. In the digital world, everybody operates through specific markers known as "cookies" describing their browsing habits and these create identity (Madrigal, 2012).

Cookies allow data collectors to track a person without even knowing

their name. In a sense, cookies define who we are without linking it to our real-world identity. There is a very thin line between taking out a mortgage and the search data that we enter into a browser when looking for an apartment in the nearby district. During a real-time online auction, cookies win the game just a few milliseconds after the completed purchase. Anyone can know who the person is, the only difference being that he or she has a name and number assigned. Many companies collect data in order to sell it to other institutions. Such data sets can be combined into a full and detailed digital image. The Wall Street Journal published a study demonstrating that the Internet has become a place where the only anonymous piece of data is the person's real name (Madrigal, 2012).

If it is possible for a financial institution to track our habits online, it would be foolish to assume that we remain anonymous when using mobile phones or televisions. Harmonising off-line data with online data (e.g. purchasing behaviours or the price of our apartment) is particularly noteworthy. Only the person's name and surname continue to be anonymous: for example, in the digital world, John Smith is referred to as 1625455. The reminder of his information in the virtual world is real. Banks have access to such information revealing Smith's habits, favourite things, favourite places and much more (Madrigal, 2012). The financial world has a unique opportunity to combine the real-world and online

Nous sommes tous témoins de la révolution virtuelle. Internet est la plus grande source de l'information libre, elle nourrit le Big Data. Toutefois rien n'est gratuit. Le prix à payer pour l'utilisation de cette information est très élevé: c'est notre sphère privée. Une fois en ligne, les données commencent leur vie propre. Les facteurs de risque, mais aussi de profit augmentent en conséquence.

Bien que les usagers d'internet reconnaissent l'immense progrès qu'il constitue, ils commencent à se préoccuper de leurs données et veulent protéger leur sphère privée. Selon une étude de l'UE, 70% des Européens ont peur que leurs données ne conduisent à des abus. Alors que 74% des Européens pense que la publication des données personnelles fait partie de vie moderne, 72% des utilisateurs d'internet craignent que ce dernier collecte trop de données privées. Ils ont l'impression de ne pas pouvoir contrôler autant qu'ils le voudraient cette information.

data. An online bank account user can be easily identified by the IP address of his or her computer upon login; once identified, their entire online activity can be successfully tracked. Various apps used in social networks offer banks an ideal opportunity to collect and analyse customer's personal data; and the customer has consented to it, often unknowingly when signing some bank's regulation. It is very rare that a customer will read and understand such a standardised and brief regulation. Most simply "accept terms and conditions" without reading them. Given that new technologies are anything but helpful in protecting privacy, it is essential that privacy is safeguarded as much as in the real world. The ethical standards surrounding financial institutions' exploitation of digital data should be clearly set out. This would delineate a boundary which banks could never overstep.

New era, new challenges

We are all witnessing a virtual revolution. The Internet is the largest source of free information that builds up Big Data resources. However, nothing is for free. The price that we pay for the use of this information is extremely high: it is our privacy. Data that goes online takes on a life of its own. Consequently, the profit and risk factor increases. In the times of Big Data, every user leaves their online tracks when browsing the web: it is called "a digital shadow." Such a shadow is not only created by the user's

activity but also by the different tools and organisations processing their data. The time of online anonymity is now over. We are on the verge of a new era in which everybody has their own digital profile which precisely reflects their behaviours. Self-monitoring of this profile is key if users wish to safeguard their own personal data. Privacy is of an essential value for most people; research has repeatedly demonstrated that the public does not have sufficient control over the information it generates. Therefore, to providing adequate protection of privacy in the online world is crucial.

Both the research carried out for his study and the results published by Eurobarometer depict a user who, although recognizing the immense benefits of the progress of the Internet, begins to express concern about their data and wishes to protect their privacy. According to a study conducted in the EU, 70% of Europeans express concerns over data abuse. They fear that different organisations may share this data with other institutions without their consent. Many Internet users, especially the younger generation, are not aware of privacy policies when signing up to social networks. When browsing the Internet, the public is also unaware that the data on their search results can be used by online advertisers. To control that, the privacy policy pursued by website administrators must be laid down in the form of a clear and simple message. While 74% of Europeans believe that the disclosure

Le comportement éthique est important pour inspirer la confiance publique et pour surmonter la réticence relative à l'analyse des données. Le Big Data ouvre de nouvelles perspectives, il peut être utile et constituer une percée dans l'évolution. Toutefois, pour cela, la société doit avoir le sentiment de contrôler ces processus. Dans un contexte de crainte, de méconnaissance des droits et en essayant de naviguer à l'aide de règles vagues, les institutions financières peuvent se heurter à une résistance du public.

of personal information is becoming an inextricable feature of modern life, as many as 72% of Internet users fear that they provide too much private information. They feel that they are not able to control this information as much as they would like (European Commission, 2011, pp. 1-3). This state of affairs does not only provoke anxiety among the public, but also erodes confidence in Internet services, consequently preventing companies from fully benefiting from the opportunities afforded by Big Data analysis. In 2010, the European Commission presented their strategy to modify the relevant rules. In January 2012, they proposed a full reform (European Commission, 2012).

Drawing up relevant provisions continues, and the technological progress is unstoppable, thus creating more and better opportunities, but bringing with them greater risks. In order to maximize benefits and diminish risks, it is necessary to regulate any unregulated matters as soon as possible, to promote ethical business and to reduce the abuse of the existing legal gaps.

Ethics as the key to success

A big challenge faced by the world of finance will be to inform the public of the use of the increasing volume of information. Since the Internet's birth, there has been a continual accumulation of data. This practice is not a novelty – it has kept pace with the development of the Internet. Currently, the production and storage of

data is not an issue (it started back in the 1970s); the challenge is to grasp the opportunities arising from the analysis of this data and, consequently, to protect privacy. Until now, mankind has unconsciously generated enormous amounts of data. Along with the advancement of technology, there are new opportunities to reap the benefits of the Internet, allowing us to draw specific and detailed conclusions based on the massive collection of processed data. Ethical conduct is essential in inspiring public confidence and overcoming the reluctance and concerns arising from data analysis. In a contemporary world, information is king. Financial institutions who are involved in the progress of Big Data solutions can obtain a very detailed picture of any (probably unwitting) internet user, thanks to the tracks they leave online. Big Data opens up new possibilities, can be a tool to serve people and could become another evolutionary breakthrough. However, in order for this to happen the society should have a sense of control over processes. When people are fearful, unaware of their rights and trying to navigate through a realm of vaguely defined rules, financial institutions will meet with public resistance. We should reflect on the lengths these organisations will go to in order to obtain the most relevant information and use it for their own gain. Data sharing is not the major problem and the majority of the population exposed to the Internet agree to that – it is the way in which this data is

Nous devrions réfléchir davantage jusqu'où ces organisations sont prêtes à aller pour obtenir l'information la plus pertinente et l'utiliser dans leur propre intérêt

used and manipulated by banks and other institutions. Without the assurance of adequate conditions of data utilization, Internet users will resist customised information rather than benefit from it. In order to exploit the opportunities that Big Data analysis affords, it is necessary to ensure adequate legislation that covers data

analysis and processing, so that the users are fully aware of the existing processes and can decide to take any action that they deem appropriate. In the current situation in which the law fails to provide such a framework, it is imperative that financial institutions act reasonably and ethically in order not to erode public trust.

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