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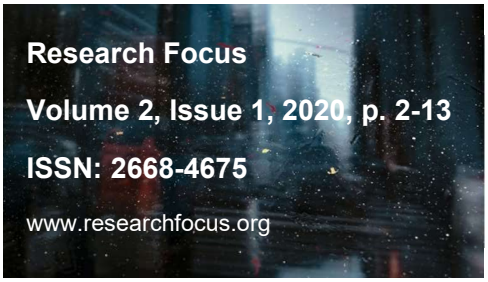
CONTENTS Vol. 2, Issue 1, 2020



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Feature

COVID-19: A NEW LESSON. REMEMBERING THE LAST PANDEMIC

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Abstract

COVID-19 is a new infectious disease caused by SARS-CoV-2 virus, a newly discovered coronavirus. The disease has spread very quickly, infecting 1 million people worldwide by 2nd April 2020, in just 3 months since the first case on 31st December 2019, and this number just doubled in the next 12 days. COVID-19 represents a new challenge that is testing our readiness for this kind of unknown. At this moment every country is fighting to defend its population through social distancing measures, that are meant to keep us safe considering that there are no vaccines yet and no particular treatment for this virus.

Keywords: COVID-19, fatality, virus, symptoms, H1N1, transmission.

Introduction

Posing a severe threat to the health of human beings, a novel strain of Influenza A (H1N1) virus was discovered in April 2009. There was an outbreak of Influenza A (H1N1) that occurred worldwide starting the second pandemic episode since The Spanish Flu in 1918. In a short time, it was discovered that the virus is also highly mutable. Researchers indicated that the pathogenic novel strain seems to be the result of recombined virus gene segments from swine influenza viruses and human influenza viruses in animals before attacking a human.

Almost 11 years later, Influenza A (H1N1) virus has become one of the many common viruses that circulate through the continents each flu season. Therefore, many people have developed some immunity to this virus, making the experts less concerned about this type of swine flu than they were in 2009.

In 2020 the pandemic episode is started by SARS-CoV-2, a causative pathogen of COVID-19, which is identified as one of the seven types of coronaviruses that have infected humans. Six other kinds of coronaviruses are known to cause human diseases, including SARS-CoV (severe acute respiratory syndrome coronavirus) and MERS-CoV (Middle East respiratory syndrome coronavirus) with a high mortality rate (Su, Wong, Shi, Liu, & Bi, 2016). Parallels were drawn directly to the SARS outbreak in 2003 which had infected 8,000 persons with 10% fatality, creating panic among people.

SARS-CoV-2 has spread even faster, infecting more than 2,400,000 people (20th April 2020). It is very important to note that almost 3,4% of patients struggle with severe disease symptoms requiring hospitalization and that “Globally, about 3.4% of reported COVID-19 cases have died.” (Adhanom , WHO Director-General's opening remarks at the media briefing on COVID-19, 2020). With more than 1.631.488 active cases of COVID-19 and 167.240 deaths, it is clear this situation is going to be much more than a health crisis and we all should be aware of the serious social and economic consequences of the pandemic.

A pandemic virus is not only a problem for the government, who has a high responsibility in assuring all the special infrastructure and all the stocks needed in fighting the outbreak,

it is also taking a heavy toll on the income of families and individuals through the restrictions many countries have put in place to protect the people.

On the other hand, the World Health Organization (WHO) encouraged the measures taken by several countries, which are suspending user fees and also providing free testing and care for COVID-19, despite a person's insurance, residence status or citizenship, but providers should be compensated for the loss of revenues after suspending the user fees. This situation seems to be an unprecedented crisis, which urgently demands an unprecedented response.

At the beginning of April 2020, the WHO Director-General said that WHO issued its Strategic Preparedness and Response Plan, "with an initial ask of US$675 million to support the response" (Adhanom , 2020). In these two months, almost US$690 million has been pledged or received. An amount of US$300 million has already been given to help WHO's work and the remaining amount has been given on a bilateral basis and to other organizations that are involved in the response.

The pandemic is also challenging while fighting against other diseases, like polio. In the past years WHO has driven polio to the brink of eradication. This accomplishment needed a global effort, initiated by Rotary, sustained by many other partners, and managed by thousands of health workers. Many of those workers contributing to the COVID-19 response. Sadly, challenging situations are reported by some countries regarding an increase in domestic violence after the COVID-19 outbreak started. As people are asked to remain at their homes, it is known that the risk of intimate partner violence has increased. Women that are in abusive relationships are now more likely to be exposed to violence, and so are their children.

How, where and when it began?

The new influenza A (H1N1) virus caused the first pandemic episode since 1918 so, many of the researchers tried to find similarities between these two viruses. According to Chinese researchers, "it has been believed that the new human pathogenic mutant has completed its genetic fragments combination in the animal body before its direct invasion

into the human body. The genetic segments studies of influenza virus from the influenza pandemic in the year of 1918 found genes similar to swine and bird flu viruses. Therefore, it is believed that the influenza A pandemic in 1918 was caused by the integration of human influenza virus to a segment of DNA from swine influenza virus to form H1N1 influenza virus that is affinitive to human body" (Hongjun Li & Ning Li, 2013).

Influenza A (H1N1) virus caused an outbreak infecting many victims in Mexico. The virus was identified for the first time in humans on 15th April 2009 and the World Health Organization declared on 25th April 2009 the outbreak of a "public health emergency of international concern" (Team, 2009). The virus was spreading so fast that in the following six weeks there were more than 214 countries that reported infections as a consequence of international air travel of the persons who carried the virus. "Knowledge about influenza transmission route(s) in very important for the development of effective intervention strategies" (H. Lei, J.W.Tang , & Y. Li, 2018).

The disease is generally known as "swine flu" and begin to make people fear that the world wouldn't be able to cope with a possible pandemic because the media perpetuated the fear from the beginning reporting every influenza-like case that was recorded as a suspect case of swine flu.

On 11th June 2009, the World Health Organization declared a pandemic and also raised the worldwide pandemic alert level to phase 6, "which means the virus was spreading to other parts of the world" (2009 H1N1 Pandemic Timeline, 2019). At the time, the WHO was blamed for declaring a pandemic, because it subsided quickly, and this decision may have induced unnecessary costs.

This time the threat to global health is represented by a coronavirus. Coronavirus disease or COVID-19 in an infectious disease generated by a newly discovered type of coronavirus. This is the third certified animal-to-human transmission of a coronavirus preceded by SARS (2002) and MERS (2012). COVID-19 disease is caused by SARS-CoV-2 virus. People infected with this virus "will experience mild to severe respiratory illness. More likely to develop serious illness are those with underlying medical conditions like cardiovascular or chronic respiratory disease, diabetes, cancer, and older people" (Coronavirus Overview, 2020). The first cross-species transmission of the virus was found

in December 2019. The first case was confirmed on 31st December 2019 and it is linked to a market in the Chinese city of Wuhan and on 11th January 2020 was declared the first death caused by this virus.

From what is known by now, "SARS-CoV-2 is highly similar to a bat coronavirus RaTG13, with an overall genome sequence identity of 96.2%" (Peng Zhou, Xing-Lou Yang, & Zheng-Li Shi, 2020), which indicate that the bat, known to be the original reservoir host of many SARS-related coronaviruses, may also be the original host of SARS-CoV-2 but the intermediate host that participate in the process of transmission remains still uncertain.

Regarding the period of time that WHO needed to declare the pandemic, as was seen above, in the case of H1N1 virus, the pandemic was declared after only 57 days from the date of the first confirmed case and by that time 74 countries have officially reported 28,774 cases of influenza A (H1N1) infection, including 144 deaths.

In the case of SARS-CoV-2, the decision to declare the pandemic has been taken after 72 days, but by this time 123 countries have officially reported 132,758 confirmed cases and 4,955 deaths. We may think that considering the criticisms that have been brought to the World Health Organization for declaring the pandemic too early in 2009, pushed the organization to think twice before taking this step. But watching the numbers, we can see that by 5th February 2020 (37 days apart from the first case) there were already 28,266 cases and 565 deaths. SARS-CoV-2 virus has spread much quicker and killed almost 35 times more people than H1N1 virus by the time each of them was declared a pandemic.

Transmission of the virus

It is known that a virus spread and replicate following these steps:

- The virus enters the body and duplicates there

- The virus cause diseases

- The virus can quickly and easily spread from person to person

The H1N1 virus is replicating only within respiratory epithelial cells. By entering into the cells, the virus causes complex pathological changes to the cells. The self-synthesis of

cellular component proteins is stopped by the columnar epithelial cells, therefore, the cells die by the lack of necessary cell component proteins.

Both H1N1 virus and SARS-CoV-2 virus, are causing acute respiratory distress syndrome (ARDS) and acute lung injury (ALI) (Muhammad Adnan Shereenab, Suliman Khan , Abeer Kanmi, Nadia Bashir, & Rabeea Siddique, 2020) which first leads to pulmonary failure and then resulting in a fatality.

Both of them also spread from person to person through water droplets sneezed or coughed out of the throat and nose of infected people. The contact can be indirect respiratory secretions contact or direct skin contact (the indirect contact refers to touching her/his own eyes, mouth or nose with her/his own contaminated hands).

The 2020's coronavirus has spread so quickly, it had infected 1 million people worldwide by 2nd April 2020, in just 3 months since the first case on 31st December 2019 and this number just doubled in the next 12 days.

An important and even the most popular transmissibility parameter is the reproduction number (R). It represents the average number of people infected by a single person (how rapidly the disease spreads).

Like other parameters, R-value can vary from region to region and also from period to period which means that this parameter can give us a hint regarding the persistence of the virus:

- R > 1, indicates that the disease may persist and even spread;
- R < 1, indicates that the epidemic/pandemic will decline in the population (although exceptions exist).

The pandemic (H1N1) 2009 influenza virus has an R0 of 1.2 to 1.6 (Fraser, 2009) which makes controlling its spread easier than viruses with higher transmissibility (Fraser C, Donnelly CA, & Cauchemez S, 2009).

As the COVID-19 pandemic disease is still ongoing we don't know yet the real reproduction number of the SARS-CoV-2 virus. At this time, it is very hard to estimate this number considering the variables, but there are lots of studies who try to estimate this parameter. For example, preliminary studies had estimated R to be between 1.5 and 3.5

(Jonathan M Read, Jessica R E Bridgen, Derek AT Cummings, Antonia Ho, & Chris P Jewell, 2020) (Natsuko Imai, et al., 2020), other studies have estimated an R between 3.6 and 4.0, and between 2.24 to 3.58 (Shi Zhao, Qianyin Lin, Jinjun Ran, Salihu S Musa, & Gunagpu Yang, 2020) and WHO's estimated (on Jan. 23) R to be between 1.4 and 2.5. A retrospective analysis on the first 425 patients with confirmed COVID-19 (Min Zhou, Xinxin Zhang, & Jieming Qu, 2020) showed that the reproduction number (R) was estimated to be 2.2 during the early stages of the outbreak other studies confirm that almost half of the first 100 laboratory-confirmed patients, had been exposed the Huanan Seafood Wholesale Market (HSWM), which is considered to be the initial source of the disease. By now it is clear that the new coronavirus is spreading faster than 2009's pandemic virus and common flu (R=1.3).

Unfortunately, COVID-19 is still a new disease and we all are still learning about the way it spreads. Scientists agreed that the virus spread mainly from person-to-person through close contact (within about 6 feet, 1.8 meters) and respiratory droplets formed when an infected person talks, sneezes or coughs. This idea guides the US CDC's (Centers for Disease Control and Prevention) suggestion to maintain a minimum of 6-foot (2 meters) distance although some experts think that 6-feet social distance is not enough for preventing the spreading.

Regarding the airborne transmission, respiratory infections can be easily transmitted through droplets of diverse sizes. WHO grouped the droplet size in two categories:

- Droplet particles (>5 μm in diameter). They can travel only on short distances, less than 3.3 feet (<1 m) and remain in the air only for a short time.
- Droplet nuclei (<5 μm in diameter). They are also referred to as droplet nuclei and can travel long distances, more than 3.3 feet (>1 m) and remain in the air a longer period of time.

The virus can also spread by touching a surface or object infected from a person confirmed with the virus and then touching the mouth, nose or eyes. Regarding the duration of contamination on surfaces and objects, a CDC's study measured the length of this time. It shows that SARS-CoV-2 virus stays on stainless steel and plastic surfaces up to 2-3 days and only one day on cardboard.

From symptoms to fatality

Analyzing the 2009's and 2020's data researchers see that the incubation period of SARS-CoV-2 virus is twice as long as influenza A H1N1 virus which is usually between 1 and 7 days, being even longer than the bird flu and common influenza.

After the infection with H1N1 virus, the clinical symptoms range from mild symptoms (of upper respiratory infection) and no fever to severe symptoms or fatal pneumonia. The usual symptoms include coughing, sore throat, fever, and headache. Regarding patient's conditions, 46% of Mexican death cases and almost half of the hospitalized cases in the US were found underlying conditions including other pulmonary diseases, asthma, pregnancy, obesity, diabetes, autoimmune diseases, cardiovascular diseases, and neurological diseases. Death usually occurred as a result of the rapid evolution of respiratory conditions. The period from the infection with the virus to hospitalization was averagely six days in Mexico and 4 days in the US. Usually, the severe cases developed cardiac arrest in a very short period of time after hospitalization.

The main symptoms like fever, dry cough and tiredness are seen also in COVID-19 cases. Other symptoms of the 2020's pandemic include shortness of breath, sore throat, aches and pains, and very few cases will report diarrhea, runny nose or nausea. An important aspect of this virus is that people over 60 years old (and people with underlying medical conditions) have a higher risk of developing severe disease and dye.

When we talk about how deadly a virus is, we talk about the Case Fatality Ratio (CFR). It can be calculated by dividing the number of infected people who have died by the total number of infected cases. Considering the available data about H1N1 pandemic, the calculation "suggest that the case fatality ratio of the pandemic virus was approximately 0.02%" (Maria D. Van Kerkhove , Siddhivinayak Hirve, Artemis Koukounari, & Anthony W. Mounts, 2013) other studies estimated "a CFR of about 0.03%" (Acton, 2013).

At present, it is very tempting to estimate the CFR of COVID-19 by dividing the number of deaths by the number of confirmed persons. However, the resulting number does not represent the true CFR. Therefore, a precise estimate of this rate is impossible at present. Once an epidemic/pandemic has ended it is calculated using the formula presented

above. But while a pandemic/epidemic is still ongoing, this formula gives us a "naïve representation". How? The current number of deaths belongs to a different figure, not to the number of confirmed cases in which is included the most recent cases.

According to this observation, the correct formula would appear to be:

"CFR = deaths at day.x / cases at day.x-{T}

(where T = average time period from case confirmation to death)" (Coronavirus Death Rate, 2020).

This formula seems to also have an issue regarding the data needed to estimate T value, but it is certainly not 0 as in the first formula if it was used to calculate CFR while the outbreak is still ongoing. It is true that this parameter like the reproduction number when we talk about CFR we can't refer at it as a single unchanging value because it changes from place to place and from time to time, so when we talk about CFR of a disease, we need to specify a place and a time.

The highest CFR rate of COVID-19 registered by now is 17.51% in France on 20th April 2020 (excluding Iran which on 24th February had 2 confirmed cases and 2 deaths, meaning that it's CFR at that time was 100%). China, on the other hand, registered its highest CFR on 17th April 2020 at a level of 5.535%, a three times lower rate than France. It is important to say that at this moment in time (20th April 2020) only Cambodia, Faeroe Islands, Madagascar, Rwanda, and Vietnam have a 0% CFR and that the average CFR is 2.85%. (data used in this paragraph include only countries with more than 100 confirmed cases, CFR was calculated as the ratio between confirmed deaths and confirmed cases, source: https://ourworldindata.org/coronavirus).

For a multitude of infectious diseases like malaria and 1918's pandemic (The Spanish Flu) children are most at risk. In the case of COVID-19 seems to be the opposite, CFR for confirmed people over 80 years old being 20 times bigger than CFR of 50-59 years old confirmed cases. (data used in this paragraph, CFR was calculated as the ratio between confirmed deaths and confirmed cases, source: https://ourworldindata.org/coronavirus, 17th March 2020, Italy).

Conclusions

Regarding the 2020 situation, the rapidity of the spread and the magnitude of the outbreak due to international traveling is unpredictable as aircrafts are capable of transporting infectious diseases across the world within 24 hours like we have seen with the Influenza A H1N1 in 2009. Therefore, the best way to end the pandemic is to know the enemy, to prepare the public health sector, to be able to respond as better as we can to this challenge of unknown while focusing on finding a specific treatment in the first place to reduce the period that a confirmed case needs to recover in order to prevent the collapse of the national healthcare systems before the peak. The first four months experience in 2020 showed us which is the most vulnerable category that needs protection. We can still learn from each other's mistakes and successes. The transmissibility as we said above is much higher this time so in order to end this episode as quickly as we can we need to implement even harder restrictions on social distancing than before to prevent the virus from spreading, without a vaccine, this is the only way to slow the spread of the virus and buying time to find a cure.

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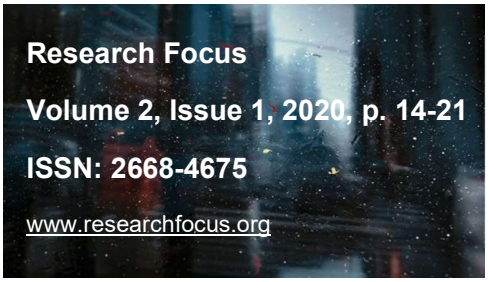

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The social and economic impacts of global warming around the world

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Abstract

Since the middle of the 19th century, scientists observed a natural phenomenon called the greenhouse effect on Earth. This phenomenon has been rising slowly the temperature on Earth for thousands of years. Unfortunately, the perpetual development of industry, the growing use of fossil fuels, intensive farming, the transportation … of the humankind has sped up this process. Today, scientists, companies, and states from all over the world are seeing this global warming taking the shape of a disaster for the world and potentially the end of the society as we know it if we don't react in a proper way. This century is going to be decisive in the survival of man on Earth and we are all concerned.

Keywords: global warming, economic, impact, world, greenhouse effect

Introduction

Global warming is a phenomenon due to a reinforcement of the natural greenhouse effect which contributes to making Earth liveable (without this effect, the average temperature on Earth would be -18°C instead of 15°C). Because of the massive (and still growing) industry, transportation, car fleet, etc., the greenhouse effect is no longer natural and now leads to a big rise in temperatures on Earth. Today, scientists evaluate this rise to 5°C before 2050 if we do not take action to reduce our CO2 emissions (MeteoFrance). It would lead to the extinction of many species (it has already begun), natural disasters, lack of drinkable water, and in the end, the extinction of humankind.

Since the middle of the 19th century and the industrial revolution, scientists observed a real tendency to global warming. At the start, they noticed global warming of 0.1° C by decade and it was not preoccupying for humankind. Unfortunately, this phenomenon didn't worry the world until the end of the 20th century with a real change in seasons, sea level rising, melting of the ice caps, and the extinction of multiple species. Even then, when scientists from all around the world sounded the alarm because of the quick acceleration of the global warming (between 0.3°C and 0.4°C every decade), governments and people didn't pay attention to them and refused to understand that it was the fault of the human way to live: industry, car fleet, fossil fuels, planes, ships, and even each one's daily consumption. The main concern of people was determined by our capitalist way of living: no one wanted to make an effort that a neighbour wouldn't do (MeteoFrance).

Nowadays, a lot of governments advised by scientists are taking effective measures to limit the effects of the phenomenon which is already affecting the world balance and the economy. A lot of new laws, taxes, and restrictions have been voted to restrain the gas emissions all around the world. Moreover, supranational institutions like the UN are trying to help and coordinate countries in their efforts to slow down the global warming (COP for example) but they are also trying to convince every country that this phenomenon will affect the whole world and that everyone has to get involved in the actions (Paris Agreement).

Those measures will change (and are already changing) our way to live and to consume but this will also constrain the companies to adapt their means of production, their geographic location, and so on. The world economy and mentality have to change, and those changes will have a big impact in the future. The era of pure capitalism is over and today, the main economic actors have to help insofar are the states, the companies, and the households.

We can distinguish two effects of global warming on the world: the direct one related to how the world will change, forcing companies, states and people to adapt, and the indirect one related to the measures taken by states and world organizations to reduce the direct effect. This paper will examine how global warming and measures taken by the states to restrain it will affect the world economy in the future.

The direct impact of global warming

The first consequence of global warming is the rise of temperature all around the world.

All the currents arable lands will probably become too arid or quite the opposite: too wet (when we talk about global warming, we can also talk about climate imbalance). As a result, the farming industry will have to relocate a part of its activity in other places: as the old lands will become too arid or wet, other lands will appear perfect for the agricultural activity. This will lead to a massive moving of farming area, probably closer to the pole, and penalize the sector and the farmers which will either have to relocate their activity or to see it decline and eventually collapse if the temperature continues to rise. We can even fear a shortage in the food industry sector or a rise in prices for essential products and, in consequence, more and more starvation cases all around the world (Ford, 2017).

The melting of ice caps. This effect is worrying because the melting of Antarctica and Greenland has already raised the sea level between 10 and 20 centimetres in the past hundred years and scientists agreed that the sea level will rise anywhere between 10 and 90 centimetres by the end of the century. Even in the best case, when we know that one centimetre of sea-level rise leads to one meter of horizontal land disappearance, this rise of sea level will have a disastrous impact on every shoreline around the world. For

example, countries like Egypt where the main arable lands are located close to the sea (Nil delta), the rise of sea level will lead to the destruction of all freshwater sources and then to an inability to use these lands as farming lands. Moreover, when we talk about melting of ice caps, it's important to understand that it concerns all the ice, not only Antarctica or Greenland: all glaciers which flow into rivers will melt quickly and the question of the drinkable water resource will become more and more urgent, partially solved with an alternative solution like desalinization factories (not very efficient) (Glick).

The rise of sea level will lead to a loss of lands which will end up being underwater. As a consequence, it will force people to migrate or to build new types of infrastructures above water. Another solution already adopted by Venice (Italy) or the Netherlands is to invest heavily in water management systems like dikes. Scientists evaluated that if the melting of ice caps continues, to follow the worst scenario (70 centimetres of sea-level rise), more than 400 million people will have to face coastal flood and may have to migrate inside the lands. (Mayer, 2020) This mass migration would be a social and economic disaster (relocation of people, the building of new homes, closing down of many companies) (Ford, 2017).

Finally, the melt of ice caps could also lead to a public health crisis (like the coronavirus) because of the numerous unknown viruses preserved in the ice caps. Many scientists are afraid of the release of a deadly virus for humankind (Fox-Skelly, 2017).

Natural disasters. Because of global warming, we can observe an increase in natural disasters such as hurricanes, earthquakes, tsunamis, floods, … all around the world and especially in areas where it was unbelievable to go through this kind of event. These natural disasters cost more than 150 billion dollars to the world every year (and it's growing every year) without taking the life lost into account (Futurplanete, 2020).

The indirect impact of global warming

Before the 21st century, people didn't think that global warming was a very urgent problem even if scientists were doing their best to sound the alarm. But bit by bit, disasters after disasters, some media and governments started to understand that the world was

changing, and not in a good way. Even if the first COP (Conference of the Parties) was settled in 1995, the actions implemented were insufficient to contain global warming. Today, many NGO organizations are trying to raise awareness in the world, giving an example of how to help the planet with small changes in our habits. We can also notice the emergence of some figure who embodies the fight for the climate like Greta Thunberg which is leading this fight since 2018 and is supported by numerous celebrities and millions of people across the world.

Every day, new reports are published with alarming results: virtually, in 1975, the day when humankind has consumed all resources produced by Earth in one year was the 1st December. In 2017, it was on the 2nd of August. We have a way of life that proves itself far above what Earth can offer to us. (Le Monde, 2018)

Change our way to live. The majority of gas produced on Earth is due to the electricity and heat production (25%), the agriculture, forestry and other land use (24%), the industry (21%) and the transportation (14%) (EPA, n.d.). We have to find solutions to reduce these greenhouse gas emissions to slow down global warming. For example, the majority of greenhouse gas produced by transportation is due to fossil fuel, so we could try to develop alternative ways of transportation or even don't transport non-essential products. We can also try to reduce our consumption of electricity and heat, our consumption of products, we have to change our way to live if we want to succeed in this fight.

A lot of people have already started to be careful with their consumption, their trash, their electricity… And it is promising to see the young generations engaged in the fight for the climate because we are trying today to save the Earth inhabitants of tomorrow (Ouest France, n.d.).

Climate Agreements. Since 1995, a COP (Conference of Parties) is taking place every year. The main goal of these conferences, where a majority of developed countries meet, is to discuss the actions to implement to fight against global warming. Until 2015 and the COP21 of Paris, the scientists always considered the actions voted as too weak to make a real change when the world was already engaged in an ecological crisis. The Paris Agreement was the first decision up to what was needed: with this agreement, all countries in the world engaged themselves to keep the temperature rise below 2°C and if possible,

below 1.5°C. This agreement (and all the other signed before) are an obstacle to the economy, with taxes for polluting companies; it's incredible, this kind of law was unbelievable 10 years ago. Even if it's big progress, some actors are not involved in these efforts: China, which is the most polluting country in the world is not taking any measure to reduce its greenhouse gas emissions; the United States, which is the second most polluting country in the world, withdrew from the Paris Agreement in 2017 (Garcia, 2019).

Conclusions

Global warming is an old phenomenon, initially natural but quickly aggravated by humankind since the 19th century. The main causes of this phenomenon are the production of electricity, heat, food, the industry, and transportation. We saw that the global warming has two consequences: the direct one with the rise of temperatures and the farming problems attached, the rise of sea levels and all its effects (lack of drinkable water, loss of shorelines, the potential spread of diseases, massive migration) and the natural disasters, their cost in human life and their repercussions on the economy.

The second consequence is a reaction of all the states across the world, the people, scientists, and NGOs, to try to find a way to stop this disaster before it's too late. The main actions of the states are the yearly COP to try to find collective solutions and put them into practice. Unfortunately, some of the biggest polluting states of the world are not involved in this fight, and, as the scientific reports go worst every month, the emergency to involve everyone is rising.

Even if people start to understand what is to be lost, and even if they are making efforts within their capacities, we can be sure that the situation is going to get worse before it eventually gets better. This century is going to change society and the economy of the world, in a way or another. If we don't succeed at all levels (households, companies, and states) to change our way of living and find agreements to save the planet, we will leave nothing to the future generations.

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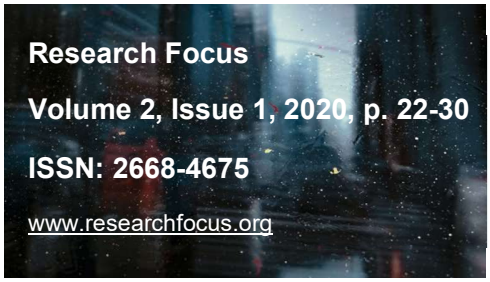

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Internationalization of businesses: Analysis of the phenomenon and its expansion modalities

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Abstract

The transfer of production activities beyond national borders and the commercial exchange on a global scale entail, in addition to direct effects on the company that internationalizes, also indirect effects on the related industries and therefore on its service providers. The greater degree of openness of a manufacturing company abroad must be supported by an adequate logistics system. In the case of outsourcing of logistic services, a positive impact is therefore expected on the companies that produce them, an impact that can be measured as the dimensional growth of these companies or the opening of new units.

Keywords: Internationalization, development, technology, innovation, direct export, franchising.

Introduction

Internalization is a very vast topic and we can assert that there exist different definitions concerning this concept. None of these is right or wrong but it depends on the context in which we are using it. From an economic point of view, internationalization is defined as the process used by businesses to raise their performances involving the international markets. The internationalization phenomenon is significantly changing the way a lot of businesses operate since they are projected in a reality characterized by high competition levels. However, a lot of companies decide to undertake the internationalization way because their domestic market results to be obsolete compared with what foreign markets can offer.

Furthermore, internationalization represents a strategy used by a lot of companies to reduce costs. If we consider a business a high cost of production in its domestic country it could move the production or a part of it in other countries which are more convenient in terms of deflated currencies and low cost of living (Kyungsoo Kim and Young Kyung Suh, n.d.). Companies that are interested in going international usually look for those markets that have a low cost of leaving as that makes it cheaper to hire employees in such countries.

Internationalization phenomenon was very popular especially during the last economic and financial crisis in 2008 when a lot of borders of companies, which were based in financial markets that mostly experienced a crisis, decided to displace the activities in foreign counties (Robert Azuayi, 2016).

The fact that the company operates abroad implies that it comes to contact with different realities from those of the country of origin: new cultures, new political systems, new legislation to be respected. This, although it must guarantee a certain "coherence" in the pursuit of the various activities, carried out, consistency which is then substantiated in the coordination and control of units located abroad.

The fact that it comes into contact with different realities could also be a strength for the company, or rather, an opportunity learning and exchange. It develops that so-called "ability strategic ", understood as the ability to learn from the environment, by developing

appropriate responses based on the input coming from the external environment and to use the right resources to achieve specifically these answers (IESE Business School, 2015). It is through coordination that the company transfers what it has learned in a context to the other units so that the entire corporate system can benefit from it.

Technological innovation

When we talk about internationalization, we usually don't consider the aspect related to innovation, as if not there was no link between these arguments. Still, there is a link between innovation and technology on the one hand and processes of internationalization on the other. Just focus your attention on the so-called "globalization of technology and innovation" (Karol M. Kopp, 2019).

It is possible classified three different aspects of this process. The first aspect is marketing (transfer) international technology. Key indicators of these activities are international trade flows, especially those related to high-tech products, and international patents: both indicators reflect the global use of knowledge.

These activities certainly involve multinationals, but also businesses, institutions, and other national subjects which, despite not having branches international, can obtain economic value from innovative activities carried out in their country of origin.

The second aspect concerns technical collaborations and international scientific. These collaborations involve many and various subjects, from national to multinational companies, but also universities, research centers and individual researchers operating in these institutions and often take the form of joint ventures and alliances "Technology oriented".

The third aspect is the international relocation of activities innovative, such as R&D and product and product innovations process that take place in laboratories and localized plants abroad. This aspect, unlike the second, involves exclusively multinationals, which are, by definition, the only one's institutions that produce added value in more than one country. The most important indicator relating to this aspect of globalization of technology

is the share of R&D expenditure abroad compared to the multinationals' total R&D expenses.

The link between technology and internationalization can be only partially understood. The problem is not understanding how much they are "International" technological activities (Goos Maarten, 2019), but understand how technology is innovation co-evolves: this is because all the activities that the company carries out abroad, have a connection with research and development and innovation in the country of origin.

Three key elements have been identified to explain this co-evolution (Justin Kuepper, 2020).

In the first place, realizing activities that create innovation makes it convenient to carry out international operations. Of course, if we invest heavily in research and development, you will have more possibilities to take advantage of those searches in other markets, not only in that one where you normally operate. Also, we are in one condition of advantage over competitors, or because it increases the production or because new products are introduced thanks to these investments and therefore costs are reduced (especially fixed costs, depreciated over a greater volume of sales). Any business you do expands in foreign markets thus gains an advantage not only from economies of scale in production but also in the creation of R&D and knowledge.

Second, the link between internationalization and innovation involves learning problems from foreign contexts. International operations can be an instrument of interaction with foreign sources of knowledge that help in increment the competitiveness of businesses. Access to foreign sources of knowledge is guided and filtered by knowledge already available within the company. So businesses need benefits distinctive (skills) not only for having access to foreign markets e to compete on an international scale but also as a tool to absorb local knowledge. The more they invest to accumulate advantages, the greater their absorptive capacity becomes the ability to further expand their knowledge base.

Third, if companies make a foreign direct investment to have access to local skills, there may also be important implications for the analysis of spillovers towards local businesses. In this case, different forces come into play. On one side, the company expands abroad

through investments directed to access local resources, especially knowledge specifications of local companies. However, based on their own "Absorption capacity", even the local company will benefit from the resources and skills of the foreign company. This interdependence has strengthened over time: the foreign companies that have carried out direct investment become increasingly able to transfer knowledge to local businesses and institutions as they have access to skills in that area, vice versa plus companies locals are open to "absorbing" knowledge from foreign companies, more are willing to transfer their own (global, n.d.).

It is likely, however, that with multinational corporations, local businesses encounter more problems. It is not certain that this "reciprocity" of exchange of resources and knowledge can take place: local businesses they may not have easy access to complementary skills of multinationals. These could act as free riders and run away with technology as soon as they get hold of it. Therefore, direct investments aimed at accessing. Foreign knowledge does not necessarily generate (mortgages) spillovers.

Foreign companies must have something to do learning is something to be taught and the same is true for domestic businesses. Furthermore, this mutual exchange of knowledge between multinationals and local businesses needs for adequate Organization; this requires a serious commitment of the parties involved, as well as a favorable environment, especially for the creation of lasting and effective links between the parties and local institutions.

Franchising

The franchise strategy, born in the United States and France, starts to spread in Italy in the 70s. According to some research, the first franchise agreement has come stipulated in France, even if not with this name but only with the same characteristics (Adam Hayes, 2019).

In the United States, however, in the 1930s, the first contract of franchising was born in the automotive industry, from the need to circumvent the antitrust legislation that prohibited vertical integration between manufacturer and retailer: thus the general

manager of the General Motors, together with the company's lawyers, devised a contract linking dealers to the parent company, but it gave them greater autonomy compared to the actual integration.

Franchising is a system of selling products and services, based on a close collaboration between the two companies, the franchisor (company franchisor) and franchisees (affiliated company), which legally and financially are independent and distinct. The franchisor grants the franchisee the right to use its commercial formula, including the exploitation of its know-how and its distinctive signs. It also assists and by far other services that are necessary for the franchisee to manage his activities with the same image of the franchisor. The franchisee uses the sign and / or brand, knowledge, commercial methods, etc. of the franchisor, starting in this way an activity whose risk of failure is rather low.

A company that decides to create a franchise system will have to plan all the necessary strategic and operational efforts.

The firm must consider franchising as an alternative strategy and prepare a plan that involves both evaluating the potential of this choice and:

- Identify the objectives that can be achieved;

- Determine whether the franchise strategy is consistent with the environment in which it operates and with the resources it has;

- Plan strategic and operational paths necessary to implement it.

Internationally, the franchisor can obtain several advantages. For example, there is the possibility to enter foreign markets quickly and minimum financial commitment; the international diffusion of the brand; implement a standardized marketing policy in different countries; entry into geographic markets where it would be risky to operate with its distribution structure because they are little known.

It will, therefore, be possible to develop a franchising network international only in globalized markets where consumers can be satisfied by standardized products, or in the case in which the franchisor, having a wide range, manages to differentiate the products to be distributed to the different franchisees.

Direct exports

There are two types of direct investment: one greenfield, which includes investments for the development of non-business activities existing in the area, and a brownfield, which contains the investments intended for mergers and acquisitions of existing businesses on the territory (the disposal of the business also falls into this category of a public company to a foreign private company) (Laurel Delaney, 2019).

Further classification of direct exports can be implemented considering the structure of the production company. In this case, it is possible to distinguish horizontal, vertical, and conglomerate direct exports. The first case refers to investments in the same sector in which the country operates of origin and are carried out to circumvent tariff barriers or for obtaining tax breaks and not (Ewan Roy, 2017). Vertical direct exports refer instead to investments in one or more phases of the production of the asset and often are carried out to reduce production costs by transferring abroad the most expensive stages. Conglomerate direct exports combine elements of both.

Therefore, it can be said that the objectives underlying a foreign direct investment may be different: an approach to the market, the reduction of production costs, the acquisition of resources. Direct exports can be implemented or by creating one in a foreign country new company, or by acquiring an already operating company.

In the latter case, the investor must keep in mind that he will go to clash with a pre-existing system of skills, with an already consolidated managerial culture, and with a certain degree of rigidity in the change.

The elements of the territory that attract direct investments of companies can be summarized as follows:

- localization opportunities in the area
- existence of operating conditions appropriate to the needs of the investor
- the complexity of the procedures for making the investment
- the current and potential value of the local market and the market reachable from that point

- differences in costs and productivity in carrying out the activities compared to other alternative territories.

In the small business, the choice is made by the entrepreneur together with the managers of the various areas/functions more directly involved in the investment.

In larger companies, however, they are involved more functions: management of the company, management of the unit of business involved in the investment, the direction of the subsidiaries already operating in the macro-region in which the investment is invested.

Conclusions

In an era such as the present one in which internationalization has become a strategic challenge that companies must face to continue to be competitive, the issue of the impact that this produces, not only on the companies themselves but on the entire economic system, has taken on considerable importance. It can be reasonably assumed that indirect impacts will unfold differently depending on the service sector - or even manufacturing - considered and the geographical context analyzed and tend to be positive especially when the supplier companies are themselves highly competitive and able to respond to the changing needs of its manufacturing customers.

These different impacts must, therefore, be taken into consideration, as well as the factors that cause them, in order to transform potential negative effects into positive ones.

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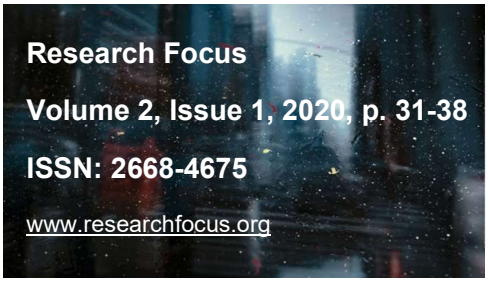

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The impact of digital marketing

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Abstract

The digital era has a huge impact on every company. Nowadays, on the internet there can be found anything a person wishes for. Businesses tend to be more and more present into technology using social media or creating websites in order to advertise themselves in order to remain relevant in their industry. All of this can be made with the use of Digital Marketing. Digital Marketing can be seen as the component of Marketing in which are used digital technologies in order to promote products and services. Digital Marketing is an essential piece for every brand to succeed since there is a huge competition in each industry. One of the main objectives of digital marketing is brands interacting with the customers through digital media.

Keywords: Digital Marketing, Marketing, Technology

Introduction

According to the generally accepted definition, marketing is the action, activity, and process for promoting, communicating, selling offerings (e.g. products and services) that have value for the society (American Marketing Association, n.d.).

Digital Marketing can be viewed as the offspring of Marketing from a lot of perspectives. For example, we use nowadays Internet Marketing, e-marketing or Web Marketing. With the constant evolution of technology, brands had to step up their game in advertising their offerings. Digital Marketing is very similar to traditional marketing, but uses emergent technology and devices (smartphones, tablets, computers etc.).

The main difference between traditional marketing and digital marketing could be a different way of doing advertisements (ads). In traditional marketing, ads are made by printing them, on billboards or via phone calls, whereas digital marketing is made online, using email, social media platforms or other new ways (Alexander L. , 2019).

In general, both techniques have the same objectives in the end, even if the ways of achieving them are different. Even if Digital Marketing seems to be new, it was first used in the 1990s when the internet was a new thing. It all started in 1993 when a clickable ad banner went live and from there it started to evolve with the growth of technology to the present day, where digital marketing implies social media, analytics and much more (Nayar, 2018).

There are many opportunities for buyers to interact with the brands and for the brands to know their clients with the help of the 5D's of Digital Marketing. Digital Devices are one of the five D's, because brands can interact with the consumer using a combination of devices like smartphones, smartwatches, computers, etc. Digital Platforms are mostly used on apps like Facebook or Twitter. Digital Media represents the communications channels that are used to interact with people through ads, emails, social media. Digital Data represents the data each brand collects about each person is allowing when interacting with the brand through media. And last, Digital Technology is about how brands create in-apps ads or email campaigns (Chaffey, 2019).

Advantages and disadvantages of digital marketing

Compared to traditional marketing, Digital Marketing has many advantages. For example, a good digital marketing campaign can have a much lower cost than traditional marketing, because in order to do traditional marketing, it takes much more effort, people, materials (example: billboards or leaflets). A website can be accessed from anywhere on the globe, through the internet, which can make a company powerful enough to sell its products and services everywhere in the world.

In digital marketing, the duration of an ad can be permanent or as much as the company wants to keep it available and also people can see the ad anytime because it doesn't depend on the location or the time zone as it happens in traditional marketing. Additionally, Digital Marketing offers the solution of collaboration between companies and users with the help of chatbots, where any potential customer can ask about the product/service offered and receive real-time answers.

Digital marketing also offers the option of subscriptions to the news about services and products. There could be a subscriber policy where the company could send updates or newsletters anytime there are new products or sales. Also, there could be created personalized offers based on the customer profile (Todor, 2016).

The improvement of selling is gained using Digital Marketing because the customers can buy much quicker and easier the product/service they want rather than calling or going to the actual shop for buying what they want (Todor, 2016). Campaigns can be created with the use of content marketing. The content, for example, images, articles, vlogs etc., can help gain social currency from being passed from user to user in order to become viral (Develop a digital marketing plan, n.d.).

Digital marketing, however, brings also some important disadvantages. For instance, Digital Marketing is time-consuming when creating a digital campaign in order to become great and viral. Also, it can be copied very easily by competitors all over the world.

Every campaign is fully dependable on the internet, so if there is no internet connection, there is nothing. There are more and more legal considerations that a brand should be adapting to the rules regarding privacy; brands can collect data following the rules of

privacy and data protection. In addition, online or mobile payments are not always secure, even if they are more secure now than they used to be. Hackers can always intervene in any of the processes, for example, ads, chatbots or payments. Moreover, a certain demographic is reluctant or simply not accustomed to buy services or products online, and for these customers the traditional marketing should still be in place.

In order to be involved in digital marketing campaigns, people need to have good knowledge of marketing in general, and tools that can help in actually doing the campaign or using the data acknowledged after the campaign. Because everything can be seen everywhere and anytime, all the negative feedback or criticism can be visible to the audience through social media. Bad reviews can lead to a bad reputation of the brand (Develop a digital marketing plan, n.d.).

Types of digital marketing

Digital Marketing is more than online ads, and it involves a lot of techniques and programs.

Search Engine Optimization (SEO) is the process of getting traffic from search engines (10 Types of Digital Marketing [with Examples], n.d.). Search engine results appear after a user types a certain keyword. Each user can receive other results based on the words that they type in. It is probably the most important technique of the digital marketing because it refers to all search engines. With the right SEO, a lot of people can be attracted to a website. Most of the people go on the first link that they see on the page, so brands want to get the first spots to get their page viewed as often as possible. In order for brands to optimize their website to appear first or at least on the first page, they include the keywords in the website titles, descriptions or hashtags. Also, SEO is not as expensive as other Digital Marketing techniques.

Search Engine Marketing (SEM) is covering another ground on the search engine, but, unlike SEO, this technique is not free. With the use of SEM, brands purchase the advertisement space in order to appear the first on the page. A company can choose from more models like Pay-per-Click or Cost-per-Click or other methods. These links in the search engine look almost the same as SEO, but usually placed above, with a sign to

show that they are paid. The most popular paid search service is Google AdWords because it allows buying ad spaces based on location or target words and even other types of data (10 Types of Digital Marketing [with Examples], n.d.).

Social Media Marketing (SMM). These days, social media is everywhere, everybody knows about it and almost everyone uses social media for different interests. For companies, social media is one of the most important types of digital marketing because it is one of the most efficient ways to promote B2C (Business to Consumer) businesses. There are plenty of social media platforms to choose from, for example, Facebook, Instagram, LinkedIn etc. With the use of these platforms, a company can engage very quickly with a lot of viewers and interested people and become one of the top brands in their field. The most used method of Social Media Marketing is paid ads. Paid ads can be found on every social media platform. Moreover, with social media, big companies can interact with the consumers by using direct messaging, polls, likes in order to see what the consumers like more and want more.

Content Marketing (CM) represents the creation of content and sharing not just to promote, but to be user-friendly enough to stimulate the interest of a potential customer. It may appear in websites, videos, webinars. The type of content depends mostly on the targeted audience (Sherman, 2019).

Pay-per-click Advertising (PPC) is relatively similar to SEO, but instead of site optimization, brands can buy the advertising space on a search engine page, useful when a user types in certain keywords (Zovitsky, n.d.).

Affiliate Marketing is one of the best ways for online marketing because in this type of marketing, a person (usually a celebrity, but not only) can partner-up with a brand in order to advertise their products/services as much as possible (example: influencers on Instagram). Every time someone goes to the site of the brand and buys the product/service, the person affiliated gets a commission (10 Types of Digital Marketing [with Examples], n.d.).

Email Marketing is about building relationships with customers because, in order to get emails from a brand, they have to sign up for a newsletter. Additionally, customers can

communicate easily with the brands through e-mail, because for every brand there are employees that respond as soon as possible to these messages.

Instant Messaging Marketing. Because nowadays instant messaging is the most popular way to communicate, brands are using them to interact with clients. People are more perceptible to instant messages than SMS or even e-mails. Communicating with the customer through instant messages can vary from customer support to giving updates on products.

Social Media Advertising represents the ads everybody sees online on every website or application. Social media ads can come in many different ways, depending on the targeting audience. A brand must make campaigns on social media because it is the best way to be seen by many potential customers, and it can help to become viral. On social media, like Facebook or Instagram, even the smallest businesses can advertise using pages or groups that may want to help them grow. Most of the new brands start their businesses with the help of this kind of advertising (Sherman, 2019).

Smartphone Marketing. In today's world, most people have smartphones, which they use very frequently for different things. Brands are aware of this and choose to advertise their products through ads, notifications, instant messages or even by playing music (a lot of ads appear on Spotify or YouTube when there is no paid subscription made).

Conclusions

Technology is evolving constantly and with the use of it, companies try to make their business more successful through techniques of digital marketing. Nowadays there is a big competition on most of the sectors in this world, from cars to work out plans that brands try to sell online through the use of digital marketing techniques. With the era changing and everything moving from a traditional perspective to more digital (online) perspectives, more and more companies create platforms, websites, web pages or maybe social media channels or accounts in order to get close with the potential customers. With the competition so high, customers tend to go to the product or service that is most beneficial

to them in more than one way, so companies try with the use of digital marketing to get and keep their customers through their advertisements or personalized offers.

Because of the changes, brands need to constantly research new digital marketing techniques and adapt their offers for the needs of their consumers in order to remain relevant as a company.

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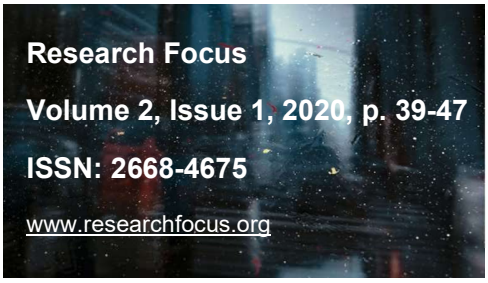

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Business intelligence. Case Study Cognos

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Abstract

Business intelligence is a process that is based on technology that is used when you want to analyze a company's data to substantiate current decisions, tactics and ensuring control and short-term planning. It also offers managers complex and in-depth models of analysis to substantiate decisions, participates in the decision-making process by substantiating decision variants being used very frequently in the strategic and tactical management of the company, helping to make decisions as efficiently as possible. The present paper aims to analyze some aspects of Business Intelligence and also to present one of the top software tools for Business Intelligence.

Keywords: tool, business intelligence, strategic, Cognos

Introduction

Business intelligence is a technology-based process for analyzing data and presenting information that can help executives, managers and other end users of the company make informed business decisions and act accordingly. Business intelligence includes a wide variety of tools, methodologies and applications that allow organizers to collect data from internal systems or external sources, prepare it for analysis, develop strategies and run queries with that data thus generating reports, dashboards and modes for data visualization that helps make analytical results available to corporate decision-makers as well as operational workers (Rouse, 2020).

Since 1960, there has been a need for an automated way to process information in the field of business intelligence, so much that the code has begun to be written on mainframe computers to extract data, analyze it and then offers a business solution to the manager or director but there were very few business automation options. Since then, we have tried to find the most efficient methods to create tools for working with the notions of business intelligence to facilitate decision-making by those who are in the management of the company. This growing need to provide development strategies for managers and directors of the company has helped to create IT systems for data extraction and processing in an easy way starting with 2010, these systems being called - "Business Systems Intelligence". These systems integrate the notion of an iterative process, the notion of exploration, the notion of analysis, the notion of structured information and data warehouse, the area of analysis or the object of analysis and the communication of results and making changes thus creating the company's strategies (Nava, 2020).

The automation of this business intelligence process has resulted in the production of several integrated tools that can manage these processes, such as ERP[1]. As they became more and more used in strategic management, various tools were introduced on the market, these being free such as JasperReports, Palo, Pentaho, Tactical, etc. or tools such as Tableau, OBI, Power BI and Cognos from IBM that will be presented in this paper (Dingeldein, 2019).

[1] Enterprise Resource Planning

What is business intelligence ?

Business intelligence is a set of processes, architectures and technologies that transform raw data into meaningful information that leads to profitable business actions. It is a suite of software and services that transforms data into actionable information and knowledge. Business intelligence has a direct impact on the strategic, tactical and operational business decisions of the organization. It supports fact-based decision making using historical data, rather than assumptions. These tools generated by business intelligence perform data analysis and create reports, summaries, dashboards, maps, and charts to provide users with detailed information about the nature of the business. The implementation of business intelligence systems implies that the raw data from the corporate databases are extracted, these can be spread on several heterogeneous systems, the data are cleaned and transformed into the data warehouse. The tables can be linked together, such as fact tables with dimension tables, and thus the data cube used in several fields such as large data volumes is formed. Then with the help of queries the user can request ad-hoc reports or can perform any other analysis or can generate strategies according to the data in the data warehouses that help in making decisions (What is Business Intelligence? Definition & Example, 2020).

Business Intelligence is a process that serves and supports the management of a business in order to make it more efficient with the help of timely, well-founded and correct decisions. In order to function, this process has, besides people, a set of specialized tools and software applications, such as Cognos. People in the business intelligence process have mainly the role to analyze the decisions and the people they come in contact with because the strategies and ideas based on the business past are analyzed by the specialized tools. In other words, the role of the employee in a company remains to be assigning the role of a decision maker. Gartner, the world leader in technology consulting, mentions the "democratization of BI" as the main trend in the business intelligence industry (BI) for 2011 (Softlead, 2016). This concept translates into the availability of information in real-time and from any location, access to the system for several categories of users and increased relevance. This business intelligence system helps the interactive viewing of data by the manager, director or by those who process the data in the system,

provides easy access to the data even if the data is stored in data warehouses due to the large volume of data. A business intelligence system is simple, visual and easy to understand, giving people the freedom to answer questions as soon as they arise, the way the view can be changed with just one click. Communicating information can be easy and efficient in a very fast time only by generating a report that is necessary and printing it as a pdf. Business intelligence is an efficient decision-making system by the organization in question (Business intelligence, 2020).

Features and benefits of business intelligence

A business intelligence system is a complex IT system that has a friendly interface and provides quick and direct access to accurate and relevant information on the main areas and activities of the business and allows the analysis of key performance indicators, helping to perform managerial functions and achieve the strategic objectives of the organization. The topic of Business Intelligence focuses on information systems that help make decisions within the company. Any company, regardless of the business time it is part of, focuses its attention on the decision-making process. Knowledge management is focused on three key concepts which are: Data, which represent concrete information about the facts that allow their knowledge and study, information, are defined as the result of organizing and processing data to produce meaning, knowledge, they represent a set of acquired information through experience or learning. Knowledge management is a technique that encompasses processes, people, content, and technology. Knowledge becomes valuable only if it is understandable to those who need it (Nava, 2020).

Business intelligence offers the ability to provide representative information for executive management, and with the help of the tools used, this is done quickly, thus helping strategic management to be able to make decisions that are as correct as possible and in the shortest possible time. It also supports strategic activities, such as setting goals for a company, planning, and forecasting. Business intelligence offers the possibility to gather, analyze and integrate internal and external data in dynamic profiles of key performance indicators. It offers the ability to access both historical data and real-time data through ad-hoc queries, depending on the information needs of each manager. These features of

Business intelligence help business managers, executives and those who work effectively with this strategy-generating tool that helps them make decisions efficiently and quickly (Intelligence business solutions for modern organizer management, 2020). Another feature of business intelligence is that it is easy to use, reports can be easily generated, the way data is displayed is understandable to everyone because diagrams, graphs, etc. are used. Another very important thing is that it is very flexible because the applications can be used on various types of software on devices, and the transition from one version to another is very easy to do. On the other hand, the data is stored on well-secured servers and is being encrypted to secure the information related to directories, reports, users, so the data is safe and given their security. The risks are minimized, which presupposes from an operational point of view the assurance of some functionalities for the analysis of the work typologies and of the information flows, the managers must be aware during the activities within the organization in order to minimize the risk and maximize the opportunities. It also helps to increase profitability, it is obtained with the help of techniques for identifying user profiles, segmentation based on investigating historical data from the company's data warehouse, so you can customize the offer to customers because it is known historically its interest or inclination of certain services of the company. Additionally, business intelligence tools allow the provision of services to ensure compliance with legal requirements and regulations and to create an environment for operational elements, data recording, and quality, for their storage for longer periods of time (Echipa Growth Center, 2019).

The benefits of using business intelligence systems are classified into management levels. A first benefit is that access to information is fast and it helps to achieve the organization's objectives, also with the help of key indicators increases the quality of decisions made and thus provides support for a competitive advantage, minimizes time for decision making and provides better control in the organization, also with the help of dynamic analyzes, business opportunities can be identified more quickly (Nava, 2020).

At the strategic level, the Business Intelligence Systems are support for establishing strategies and follow the achievement of objectives, allowing comparative reporting, tracking performance indicators, achieving simulations of economic growth or activity

forecast. For example, a general manager may have a dashboard on the screen with the most important indicators of the business he leads and thus can make decisions according to the strategies presented on the screen. At the tactical level, Business Intelligence Systems can provide a foundation for many areas, such as finance, marketing and or in supporting managerial decisions. At the same time the accountant can perform various financial and statistical analyzes based on economic data, the marketing specialist can extract useful data from analyzes about customers, their preferences, market trends, etc., and a sales professional can monitor which products are the best selling to whom, in the locations and in what period, can analyze the consumer's behavior in order to prevent with personalized offers (Mazareanu, 2020).

Case Study Cognos

Cognos has traditionally been one of the best-known business intelligence products. It is best known for the "PowerPLay Cubes", which ensure that the instrument is perceived as very easily friendly. Together with Business Objects, Cognos has been the leading provider of Business Intelligence solutions for enterprises for years. Many organizations work with one of these two products. Cognos has undergone a series of upgrades which has helped it reach the top of the market for business intelligence systems. As a historian, Cognos Analytics was originally developed in the mid-1990s by Quasar Systems and later acquired by Cognos, which was taken over by IBM in 2008 (Cognos Analytics, 2020).

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The main components of the Cognos interface are the following:

- The welcome portal where the user can search in the content of the team or own content and choose either already created reports or create new reports or dashboards or stories. User access permissions can also be set from here (IBM, 2020).
- Reporting by accessing this option opens an interface where there is a wide range of professional reports that we can edit or even create using a predefined template (IBM, 2020).
- Dashboards and stories from where one can view, monitor and communicate information and analysis on data with dashboards and stories. One can assemble a view that contains views such as graphs, charts, tables, maps, or any other visual representation of the data (IBM, 2020).
- Modelers and administrators create modules and data packages that they make available to users for use with reports, dashboards and stories (IBM, 2020).

One can create and manage accounts (users, groups, and roles), programs or connections to the data server. It also performs tasks of configuring and customizing the experience of the products and the user interface (IBM, 2020).

As it can be seen, Cognos has a user-friendly interface so it can be purchased without the possibility that those who use the application can not handle it. Cognos has won numerous awards on the business intelligence market and thus has become the top market in recent times (Cognos, 2020).

Conclusions

Business intelligence is a method to help companies through the tools used by this technology to make decisions as efficiently as possible without delaying or anticipating the evolution of the company according to past data stored in data warehouses.

The Business Intelligence Systems represent an important factor for the strategic management of the company and also for the other users of the respective instrument, being able to be connected to the data and reports generated based on the company information. branches of activity. These tools help to define the business strategy based on past data, helping to execute business processes. The data is also collected from the

company's business and integrated into a software tool that helps generate strategies for the company.

The tools used in business intelligence help the process of fast analysis of the company's data-generating information and knowledge starting from the analyzed data inside the company. These tools, such as Cognos from IBM, are needed to help the strategic management of the company make decisions in the shortest possible time that helps the good of the company by anticipating the wishes of the customer who has been in contact with the company and giving him exactly what he wants it depending on the history of his accessions.

Cognos is one of the working tools in the field of business intelligence that facilitates quick access to company data using a friendly interface and easy to use by anyone who wants to try this product. Also, this is an IBM brand product that has an increased competition market and they managed to bring Cognos to a top place for the competition on the Business Intelligence market.

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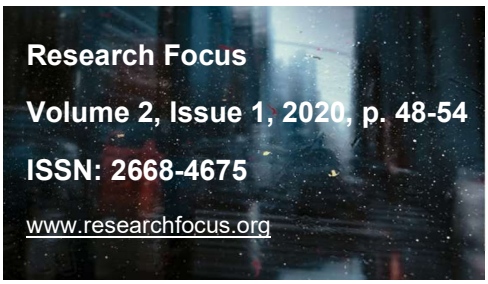

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The cryptocurrencies, currencies of the future?

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Abstract

Cryptocurrencies are widely used on the internet. Many studies are very specific in a particular area of cryptocurrency. The present paper tries to gather all the important information about those studies and tries to explain them. This paper examines how this kind of currency works, how it can be used, and the effects it has on our world.

Keywords: cryptocurrencies, bitcoin, operation, blockchain, environment effects

Introduction

Since the beginning of humanity, peoples traded some physical assets as money. Nowadays, our money system is governed by a centralized authority, and thanks to it we trade bills and coins but also digital money when we make a transfer and card payments. In 2009, Satoshi Nakamoto came up with the idea of creating a currency control by

calculation rather than the government (Mining, 2020). Nakamoto created the best-known cryptocurrency, the Bitcoin. Since Bitcoin creation, a lot of other cryptocurrencies have sprung up. Cryptocurrency users love those benefits because there is no political dependence and there is a high-performance security system. On the other hand, there are some drawbacks, for example, the volatility of the value, the fact that some people use them for black market transactions. Finally, the security system requires a lot of energy to work, and at the time of ecological transition, it can be a problem (Martucci, 2020).

Definition

When we talk about cryptocurrency a lot of people think only about Bitcoin, but there are over 1,500 cryptocurrencies in circulation and new ones are being created every week.

These currencies are only digital, which means there are no coins or banknotes. They are decentralized, i.e. they don't have a central server that controls the transaction. Additionally, crypto-currencies work in peer-to-peer, being passed from user to user. This peer-to-peer system, in combination with the encryption of user data, does not allow other users to access to their information. This encryption, called cryptography, is almost impossible to hack. Furthermore, you don't have to give personal information to buy and use cryptocurrencies. This aspect doesn't appeal to everyone because it facilitates black market transactions. Last but not least, cryptocurrencies are global, they can be sent all around the world more easily than any other currency (Bitdegree, 2020).

How does it work?

The security system of cryptocurrencies is very efficient. Cryptocurrencies use a validation system called "proof of work". This proof is provided by "miners", i.e. people who use the power of their computers to solve complex mathematical problems that are the key to the verification process. The mining system is open-source, which means that everyone can confirm a transaction. Moreover, cryptocurrencies are managed by a register that can be

consulted by everyone, called the blockchain, which lists all transactions since the first cryptocurrency transactions.

It is almost impossible to fake a cryptocurrency transaction in the blockchain because they use hash functions. When a transaction is recorded in the blockchain, they will not write, for example, “Jordan gave 2 coins to Léo” but an encrypted sentence like “93m25qg245dsg615efe12dh22grehs11gnj”. When someone is watching the blockchain, he can’t know what this string of letters and numbers means but he can change it, that is why after each record it is inserted a hash generated from the transaction and the last hash. If someone wants to change a transaction, he has to change all the previous transactions. Because this may be possible, it was decided to add a number, called “nonce” at the end of each record. As such, it’s almost impossible to hack the transaction (Cointelegraph, 2020).

When there is a transactions request, the following steps take place:

- The transaction requests
- Broadcast to the network (miner’s network)
- Miners network verifies and records the transaction in the blockchain
- Transaction is approved

In exchange, the miner’s network will receive a financial gift in Bitcoin; if the network mines Ethereum, the miners will receive Ethereum currency as gifts.

With some exceptions, most cryptocurrencies are created with some units of money not available at the beginning, but only through mining. At the same time, for most of them, there should be defined a ceiling on the quantities that will be in circulation. For example, the issue of Bitcoins is limited to 21 million units, as provided in the initial code. This cap is intended to mimic the scarcity of precious metals and to avoid hyperinflation.

Payments with cryptocurrencies

Wallet. There is no account for cryptocurrencies, like there are bank accounts. To obtain Bitcoins, you have to own a wallet. There are several ways to get a wallet, and the three most important ones are discussed below.

First, the most secure way but the more expensive is the "**hardware wallet**". These are devices offering an optimal level of security in that they store private keys on an embedded chip, the processor being the only one able, independently of a computer, to carry out the signing of a transaction. Only "whales", a nickname given to holders of large portfolios of cryptographic currencies, have this kind of wallet.

A second way is a software that you install on your personal computer. This is called a "**desktop wallet**". Whatever the level of security of this type of wallet, the user must always make sure that his computer is not vulnerable to viruses and malware.

The last way to get a wallet is the most common because it's really easy. You just have to open an account on a trading platform (there are about a hundred of them in the world today), Coinbase. This practical solution allows you to make online purchases, but also in the physical world, from merchants accepting payment in cryptocurrencies (if the platform has a mobile application) (Vakhnenko, 2019).

Buying cryptocurrencies. Unfortunately, to buy cryptocurrencies you have to own fiat currencies. You have to go on trading platforms and buy with your fiat currencies the cryptocurrencies you want. To finish, send it to your wallet.

Using cryptocurrencies in real life. In 2010 it was already possible to buy things in real life using cryptocurrencies. On May 22nd, 2010, the first-time real property was acquired thanks to cryptocurrencies: a man decided to buy two pizza for 10.000 Bitcoins. If he had kept this 10.000 of Bitcoin, in 2018 he would have the equivalent of 55 million Euros (Wong, 2018).

Nowadays it is possible to purchase almost everything using Bitcoin, for example, buy a beverage in several bars, buy professional services, get a taxi, pay for plastic surgery, donate to charity, buy food in a restaurant, and even pay taxes. Much less common is the transaction for buying a house; the biggest Bitcoin transaction ever was made by Michael Komaransky, who decided to sell his house and accept only Bitcoin for the transaction. Buying flights and booking/paying for hotels with some cryptocurrencies is possible thanks to Expedia.com, one of the most visited websites of the world (Taylor, 2019).

In this field, Switzerland and the United States are precursors, most of the examples mentioned above being registered principally in these countries. As an example, in Switzerland, following the example set by the municipality of Zug in 2016, the city of Zermatt now accepts Bitcoin as an official payment for municipal taxes and counter transactions. No complication for the municipality because the Bitcoin that is collected is then immediately converted into Swiss francs by the company Bitcoin Switzerland (Partz, 2020).

Impact of cryptocurrencies

The blockchain technology allows decentralization. Therefore, many mining farms exist all over the world. But when we add up the energy used by all of them, the result is huge. According to a calculation made by the site Bitcoin.fr, the Bitcoin network had consumed in 2018 about 40 terawatt-hours. To give you an idea, this energy could supply electricity to 2,400,000 French people. This Bitcoin network consumption is higher even than the consumption of countries such as Slovenia or Latvia.

To understand what these data mean, it should be compared to the consumption of the banking system. According to an estimation, one Bitcoin transaction is almost equivalent to 100,000 VISA transactions. But it’s not as easy to compare, banks need different technologies in order to operate: production of bank cards and cash, the institutionalization of the system, and so on, whilst the Bitcoin is self-sufficient. In addition to this, Bitcoin can be managed remotely by a small team of developers, a small group of individuals from anywhere in the world. The banking sector requires a lot of employees

who will have to use transportation to go to work or meetings, use heating in winter, and send millions of e-mails, etc. However, some approximate calculations show that the consumption of the banking sector is about 100 terawatt-hours per year, i.e. only two times more than Bitcoin (Berné, 2020). But this is only the visible face of the iceberg. The bank energy consumption data showed before only includes servers, agency, and distributor networks, but the production of physical money, especially coins, should also be taken into account. This production requires the extraction of gold. It should be noted that gold mining requires the use of chemicals, which are particularly toxic. This is the case with mercury, which is used in gold mining to separate gold from other minerals. This heavy metal also causes serious illnesses and has a terrible impact on populations when it is in the air. The same for cyanide, which harms the environment, tends to seep into soils, waterways and ecosystems, and can poison food. Water pollution, deforestation, chemical damage, etc., the environmental consequences of uncontrolled gold mining can be catastrophic, not to mention the damage to workers' health (Theworldcounts, 2019).

Bitcoin is a new way to make transactions. Its energy consumption may decrease as technology evolves. In addition, many serious cryptocurrencies projects are in progress, with new ways of thinking. Maybe one day one of them could meet all the criteria to compete with fiat currencies.

Conclusions

Even if cryptocurrency has a lot of advantages, this technology is too new to be trusted. Moreover, it has some drawbacks like its energy consumption. One day surely a cryptocurrency will be able to offer us a revolutionary technology. That will allow having a currency without volatility and with a low energy consumption. The digital space is just at the beginning. So, we can think that one day a cryptocurrency could take the place of our fiat currencies.

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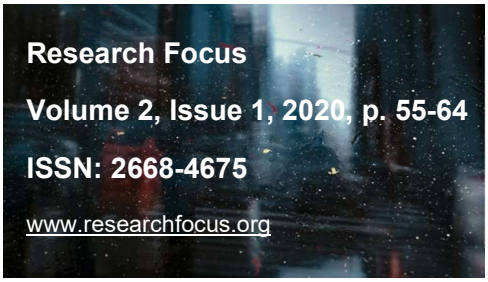

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Risk management in the banking sector

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Abstract

The risk may have a big footprint on a loan business either as an effect that is felt in registered direct losses, and effects that are felt on customers, personnel, business partners and even the bank power. Banking risks are those risks that banks face in applying ongoing operations and not only particular risks of normal banking. Bank risk is the grade of waste suffered by a bank where the counterparty (the consumer) goes in insolvency without being capable to pay its debts to the bank. Banks concur that the most important origin of losses was the exorbitant concentration of risk on a customer, business or economic sector, a country. It is vital that a trusted bank strategy is to include plans and procedures regarding the control of banking risks in order to minimize the probability that inherent vulnerability risks to influence the bank.

Keywords: banking risk, bank management, bank contamination, manifestation of risk, credit risk, operational risk, market risk.

Introduction

The complexity and diversity of banking risks have evolved lately upward due to increased competition between banks, due to the growth of markets financial but also due to the increasing number of financial products and services The changes that have taken place in the banking financial markets in recent years have led to major changes in risk in banking institutions. The role played by these within the financial sector, economic growth and financial stability, is extremely important, which is why financial risk management has become more important as never before.

Because of the subjectivism of the accurate assessment and measurement of the risks in the banking enterprise, describe the risk of the banking activity is difficult. This term does not have a single accepted definition.

However, most of the specialists in the field agree that it can be characterized among the main features: causes of instability risk, critical action for the manifestation of banking risks, and the possibility that the objectives are not achieved.

Risk is an unavoidable part of any human activity, business included. Companies, banks too, try to reduce the impact of risks while keeping or increasing the profit (Mehran, 2012).

1. Types of banking risk

In the BNR[2] regulation no. 18 of September 17, 2009 regarding the management framework of the movements of the credit institutions, the internal process of checking the competence of the capital to the risks and the conditions for outsourcing their activities, defines the significant risks, with an impact on the bank's patrimonial and reputational situation as follows:

- credit risk - act like the existing or future risk that could adversely affect the profits and the capital as a result of the debtor's incapability to deliver the contractual duties.

[2] BNR = Banca Nationala a Romaniei (Romanian Central Bank)

- liquidity risk - the existing or future risk that could adversely affect the profits and the capital, driven by the lack of ability of the credit institution to respect its maturity obligations.

- interest rate risk - the existing or future risk that could adversely affect profits and capital as a result of opposite changes in interest rates.

- market risk - the present or future risk of a negative impact on profits and capital caused by market fluctuations in capital stock prices and interest rates in terms of trading portfolio activities, as well as currency and price fluctuations goods for the entire activity of the credit institution.

- country risk - the risk associated with credit risk, which is determined by the economic, social and political conditions of the country of origin of the borrower.

- transfer risk – a part of the country risk, determined by differences in currencies between countries.

- risk related to information technology - a sub-category of operational risk that refers to the current or future risk of negatively affecting profits and capital, determined by the inadequacy of IT strategy and policy, information technology and information processing, with regard to management capacity, integrity , its controllability and continuity, or the improper use of technology.

- reputational risk - the present or future risk of negatively shock profits and capital decisive by the unfavorable perception on the image of a credit institution by clients, counterparties, shareholders, investors or supervisory authorities.

- strategic risk - the current or future risk of unfavorable affecting profits and capital caused by diversity in the business climate or conflicting business decisions, inadequate implementation of decisions or absence of reaction to changes in the business environment.

Principles of risk management according to ISO

According to ISO 31000[3], risk management should create value. The resources spent on risk reduction should be smaller than the impact of inaction, be an essential part of organizational processes, and be a component of the decision-making process. Besides, they should explicitly address uncertainty and assumptions, be a systematic and structured process, and rely on the best information available. They should be adaptable, take human factors into account, be transparent, and be re-evaluated continuously or periodically.

The importance of risk management

Banks should combine performance programs and risk management strategies in order to reduce the bank's exposure to risks (Gates, 2012). This strategy should be integrated, however, with the main objective of a bank (of any company, for that matter), which is to minimize the bank losses and realize profit for shareholders (Aebi, 2012).

The banking risk highlights the possibility that in a certain transaction the expected profit will not be obtained, or a loss may occur. Thus, banking risk is a specific form of application of risk theory in the field of banking activity.

But not always these two objectives - general and sectoral - agree. In some situations, the cost associated with the management of the risks may be even higher than the exposure to those risks (Lai, 2014). The different methods of application in it should not be made only by the efficiency that it implies but by the method of evolution and the percentage in which it is performed properly.

In other cases, the bank may take certain risks intentionally but in this case the decision should take into account both losses caused by the risks themselves and the costs of mitigation measures (Doherty, 2000). But minimizing the risks should not turn into an objective in itself. Moreover, the objectives of banking management are three: maximizing the profitability, minimizing the risk exposure and respecting the banking regulations in force.

[3] http://isoupdate.com/standards/iso-31000/

The importance of bank management is not only to minimize costs. The permanent concern of the management to minimize the risk exposure has positive effects on the behavior of the employees who become more rigorous and more costly in fulfilling the tasks of service, „the psychological effect of discouraging fraudulent activities is not to be neglected either." (Molyneux, 2006) The existence of adequate programs for the prevention and control of banking risks also contributes to the institution's imposition within the banking community, not least the existence of such programs conditional on the admission or participation of the respective bank. interbank associations or obtaining higher qualifications from the banking authorities.

Exposure of the bank to risk

Banks are subject to a wide range of risks during their operations, talking about a system of risks that often act simultaneously and interdependently. In general, the risks of banking are divided into several categories: financial risks, operational risks, risks business, accidental risks. Financial risks include two types of risk: „pure risks - including liquidity, credit and credit risk" (Drigă, 2012) they can generate losses for the bank if the management is not appropriate, and speculative risks, based on financial arbitrage, can produce a profit in if the arbitration is correct, or they can generate losses if it is not done correctly. Many more categories of speculative risk refer to taxes, currency and value market risk.

Innovation in the banking environment

The analysis and management of economic risk in the banking field are always two problems current and extremely important. Every financial institution is trying to get one high-level organization in line with current realities related to economic changes and of financial markets. This approach emphasizes the responsibility of the main participants, the care is represented by the treasurers, monetary institutions in order to have a governance function, correlating with the management of the different dimensions of the financing risk.

In the last decade, innovations in the financial market and internationalization of financial consequences cause the appearance of the bank unrecognizable. Technical progress and

Market disruptions together give new opportunities in the banking field under the conditions increasing the pressure of competition between banks and beyond.

Financial innovation also meant increasing market orientation and profitability in the markets banking, especially the introduction of new concepts, of „new operations mainly of transactions with securities, stock market speculation, hedging operations, etc." (Philipp Härle, 2008) This process was possible using profit from mortgages, leasing, and external loans, a step back into what regards security for sales, a known process of securitization.

The first motivation for innovation was the introduction of the conditions related to capital prudence, materialized in the transformation of new types of financial instruments outside balance. Besides, the association of profit with any of these very volatile instruments are important because they are similar to the financial markets in which come expose banks to high levels of risk.

Risk-based on bank analysis

The management of the bank, which is based on the information provided by the financial statements and the specific analyzes generated by the data contained therein, continue to be a key factor in maintaining stability and confidentiality in the financial system. The methodology used in reviewing banks, during and outside the management process, is similar to that used in the private sector. The evaluation of the bank in a competitive and uncertain market environment, involves a process complex. In addition to the management and supervision itself, others are needed factors to establish the security of banking institutions and the balance of the financial system and the financial market.

The main techniques for financial risk analysis are the review of the bank risk

The basic bank includes important qualitative factors and places the financial reports in the risks of taxation, the risk of driving, the trends of change like that risks, and highlighting relevant issues. Such aspects include quality and style governing and governing body, proportionality, complexity and consistency internal control, the opportunity and accuracy of the information management system and informational support. Without support,

commitment, capabilities, and knowledge of the top management, the program cannot succeed find top management support (Adams, Governance of banking institutions, in corporate governance: A synthesis of theory, research, and practice, 2010).

2. Risk management in central banks

Central banks admit choices and restraints that disagree with those of individual banks. The targets of central banks are characterized in their acts, which generally indicate the care of cost stability as their initial mandate. Risks taken in central banking activities need to be analyzed in a holistic manner, considering the interaction of different portfolios and operations. For that purpose, an up to date extensive risk monitoring and reporting framework is required, capable of „providing decision-making bodies with convenient risk management input." (Alexander C. , 2005) As a fundamental part of the risk management objective at a central bank, the major control of requirements needs to be attended, both in terms of the illustrate lines and organization of the risk management function.

Romania's situation regarding the risk

In Romania, banks faced all the uncertainty factors in the context of general fluctuation caused by changes in statutes and operation frameworks, competition from investment funds and other financial institutions, as well as a general decline of large accounts (Bowling and Rieger, 2005). Under these conditions, it is imperative that banks adopt efficient risk strategies and mitigation actions, combined with a more integrated use of risk management tools.

3. The meaning of risk in the context of banking financial crises

The issue of financial crises is extremely broad, it can encompass a multitude of factors of financial, economic, social, ethical, technological and human nature, which through association may influence financial activities at the level of a country or region that covers several countries.

Financial crises, the result of one's irrational exuberance or several markets, they are not recent phenomena. These appeared with the evolution of money and the development of financial markets, and some of them even succeeded remains in history. A retrospective look at the major financial crises they have experienced place in history it can be seen that these financial crises have a degree of internationalization more and more and more and more and more widespread.

Under the current conditions the banking system during the crisis caused by COVID-19 pandemic.

The explosion of the COVID-19 (Coronavirus) epidemic and its global spread since February 2020 created immediate significant societal challenges and risks to the economic outlook. „Although the long-term magnitude of the economic shock cannot yet be quantified, economic activity is likely to be curtailed" (National Bank of Romania, 2020).

Since the financial crisis, European banks have concentrated their capital position, accumulated substantially reserves of liquidity and revised the quality of stocks in their balance line. EU banks have realized measures to establish the continuity of activity and services that are appropriate to customers but are facing operational threats, as a deduction they need to focus on their core operations and critical functions. Supervisors work with banks to maintain support for the population and business sectors, especially small and medium-sized enterprises, and to ensure that the basic needs of their clients are met.

The Romanian Central Bank (BNR) developed amendments to the prudential banking regulations, in line with the European and international recommendations. , Moreover, BNR worked diligently to ensure efficient functioning of the payment and settlement systems in national currency and the flow of commercial and financial transactions, regardless of the evolution caused by the pandemic..

The Romanian Central Bank constantly monitors the internal and international developments and the impact of the COVID-19 pandemic on the financial markets and

the national economy, thus taking in real-time the necessary measures to ensure financial and economic stability and the liquidity of the banking sector.

Conclusions

The analysis of the aspects related to the economic content of the risks demonstrated the lack of a unique approach to the notion of risk, generally accepted by most economists. Of also at present, there is no rigorous delimitation of all types of banking risk.

The diversity of risks that a bank may face, as well as the multitude in situations that generate risks, it makes impossible a unique classification of them. I identified some of the causes that have generated a variety of forms of banking risk, between these, the most representative are the phenomenon of globalization and the process of innovation. The existence and management of banking risks are inherent in the activities carried out by banks and banks as financial intermediaries.

Investigation of aspects relevant to the development of current trends in banking risk management has shown the importance that corporate governance must have as well as the need for implementation principles of sustainable banking management. the need for correlation credit risk management. In this background, it shows up decisive to analysis the adjustments international banks in the posture of banking risk by repeatedly readjusting the methods of risk management for economic realities, as well as the preparation by each bank institution of a liquidity plan that is always subjected to stress tests, to be able to identify early on the existence of disturbing factors.

The current difficult economic environment and the social and political changes represent the premises increasing the role and impact of non-financial banking risks on the activity of institutions banking. Banks can successfully manage banking risks if they recognize the role strategically of the rating models if they use the evaluation, analysis, and management in view improving the quality of bank examination.

Banks can only profitably take care banking risks if they perceive the strategic role of risk management, if use analysis and management to increase efficiency, if adopts precise measures to adapt the performance to the risk and, if they will create mechanisms risk

performance reporting, to ensure that investors understand the impact of risk management on the value of the banking institution.

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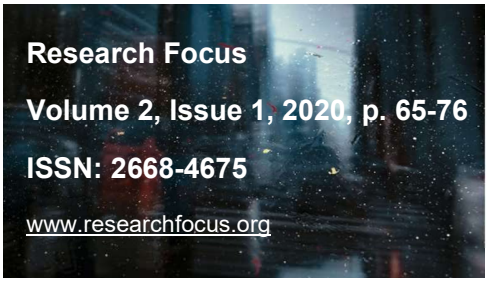

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Storing memories: how to safely keep photos, videos and documents for decades

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Abstract

Long term storage of personal photos, video and documents is an actual issue that most people face. There are plenty of methods to realize this, ranging from printed photos and storage on local computers to using cloud services with artificial intelligence. Each method comes with advantages and disadvantages when considering time, money, security, privacy, accessibility, integrity, etc. This paper describes all methods emphasizing the major pluses and minuses of each of them. It also concludes how data can be stored to realize its main goal: bringing memories back to life!

Keywords: photos, videos, storage, backup, SD, hard driver, NAS, cloud.

Introduction

Year by year the technology is cheaper, and it reaches more people around the word. This is true especially for computers, mobile phones, and internet related devices. As a direct result, the access to image and video recording becomes easier every day. It means that people have access to a bigger quantity of pictures and videos as compared to the past. It is a serious and complex issue how to store all of them. The questions arise from multiple perspectives: where to store this big amount of data, how to ensure easy access (to store and then to retrieve the data), how to allow remote access, how to realize backup of this data, how to force privacy and secure access to the data, how to ensure the file formats are recognized over decades, how to easily search and retrieve desired data/files, what are the best methods for the paid price, and most importantly how to ensure that all of this last for decades with minimum effort from the user (owner of data) side. This papers analysis various literatures work, research and reports and answers all this concerns. The estimations consider 50 years of storage for a family generating in a year 1000 photos, 200 videos of 5 minutes each, and 500 documents of 1 MB each. The analysis focuses on memories and only tangentially on professional photographers, video makers and documents libraries.

Printed documents

The traditional way is to print the photographs (or a selection of them) and store them in hard copy albums for example. There are plenty of formats (sizes) available for the printed pictures. It requires some time to select the pictures and it is also not so cheap. Many individuals capture around hundreds of pictures per month, which is around one thousand pictures per year. Printing 200 pictures means 20% of them. Aside from the price, this method gives one album per year, 50 albums in total which is manageable.

As mentioned by Schofield (2018) choosing printed photos might be one of the options because digital data is a particular problem. Storage formats change all the time and also the operating systems, software and file formats keep changing. This means that at some time in the future the user might not be able to open (see) the content of a file. Happily,

the well-known and commonly used .jpg/jpeg picture file format, described by Ștefănoiu (2003), pp. 432-449, may last for decades despite efforts to replace it with JPEG 2000, PNG (Portable Network Graphics), and many others, as specified by Schofield (2018).

Although it is possible to print ordinary documents (Microsoft Word and PDF files), there is no common way to store "printed" videos. In addition, storing printed documents may be quite costly (money and storage place) if we consider thousands of documents of hundreds of pages.

Store on computers

The second option is to keep these files on the computer's hard drives. This is extremely convenient because the files are copied initially on those locations (i.e. people first copy pictures on their computers, laptops, etc.) and then backed up elsewhere. The big disadvantage is that the computer hard disks tend to fail often, as emphasized by Sullivan (2018). That's a very big risk to lose all the files. Backups can be created on additional hard disk, but this increases the cost and involves regulars check to verify the integrity of those hard disks. Alternatively, backups can be created with a NAS device or in cloud as shown below.

Removable disks storage

A good option is to store the files on removable disks (CDs, DVDs, Blue-Rays, etc.). The good thing is that these disks occupy small space for store (small thin covers can be chosen for CDs, DVDs, etc. or they can be kept in paper covers), but they require time to be written. That is because, according to Plumridge (2019), errors might occur while burning CDs or DVDs. When burning a CD or DVD, it is advisable to close all other programs, and use the verification option at the end of the process. Optical disks require usually a bigger time to write and read. For safety reasons, from time to time, let's say every couple of years, all optical disks need to be read back to ensure the data is still readable. This is big time consuming because each disk has to be manually operated, inserted with care in a reader device, etc. Storing optical disks requires also some care,

high temperatures and direct sun light can damage them, as mentioned by Schofield (2018).

External hard disks or SSDs can be use, but again they require effort for making the copies. Each device has to be individually connected to the computer and then carefully disconnected. Failing to do this safely might damage the disk. According to Plumridge (2019) and to Schofield (2018) the biggest drawback to external hard drives is their vulnerability to physical damage, such as from a fire or some other disaster. Also, magnetic drives rely on physical moving parts, making them more vulnerable to mechanical failure than SSDs. Many photographers who use hard drives store a second drive at an additional secure location. The big advantage is the store capacity. External hard disks of 2 TB or 4 TB can be purchased for reasonable price. This come also with some risks: experience showed that bigger hard disks tend to be more complicated to handle when data recovery is attempt. In other words, if a big 4 TB hard disk fails, and then there are big chances to not be able to recover the data. The counter measures for this are: use smaller capacity hard disks, duplicate the data on multiple big hard disks, and periodically check the integrity of the disks and their data.

Krajeski (2019) made a research and showed the best options for external hard drives. According to the research the 2 TB Seagate Backup Plus Slim is the best option because it is reliable (based on the largest sample of Amazon reviews) while still providing fast performance.

Recently, the price for the Secure Digital (SD) cards decreased significantly. Additionally, they have bigger capacities (128 or 256 GB can be bought at affordable prices). From time to time there are offers when people can buy big capacity memories (256 GB or bigger) at small prices. And last, but also very important, these SD memories are very small in size. In a recipient where we store one CD (700 MB) or one DVD (4.7 GB) one can store tens of 256 GB SD memories. The entire life can be stored in a CD cover filled with SD memories. As pointed by Plumridge (2019) these cards are small, suitable for portability, but his also makes them easy to lose or misplace. Also, as Plumridge (2019) mentions, they have limited lifespan, specified as power-on/off cycles and cheap SD cards are more prone to failure than those from well-known brand names.

According to Plumridge (2019) flash drives are extremely convenient ways to store and transport files. They can also be easily damaged or lost.

Both SD cards and USB flash drives are not suitable for long term usage because the charge decays over long periods as specified by Schofield (2018). To be safe, they should be refreshed every four or five years (using for example the Windows checkdisk command).

Storage in the cloud

Apparently, there are many advantages using this storage method. It is not so expensive. There are also many companies offering storage space for free (or at least a reasonable amount of storage for free). It is easily accessible over internet from a multitude of devices (mobile phones, tablets, laptops, computers and others) and operating systems. It offers archive features, classification of data, multiple and flexible search options, tagging of the location, etc. It occupies no physical space (at the location of the data owner). File format conversion is automatically executed, but this is mainly done for saving storage, as mentioned by Plumridge (2019) who refers to the case of Google Photos that compresses to 16 MB all photos uploaded to the free accounts.

There are also costs and disadvantages. In order to get a bigger amount of storage, let's say enough to store pictures and video recordings for 5 or 10 years, then the user have to pay. Also, in order to not get the pictures compressed and keep the original format, there is also payment. Another disadvantage is due to security issues. Unless the data is store solely on your own device in a protected location and with restricted access, there might be security issues. Unauthorized access might be possible. Of course, companies are allocating great efforts to ensure data privacy and protection, but from time to time some security issue leaks to the media.

A study made by Ait Ouahman (2014) showed that the unauthorized access to cloud data may come from inside of from outside the cloud company. A dishonest administrator may still the data. A single customer may access data and compose services from multiple cloud providers using a mobile application or a browser. According to Ait Ouahman (2014)

this kind of access brings in an inherent level of risk and this risk has been called privileged user access. Unauthorized access can be executed through the web browsers. This brings into attention the security provided by the web browsers, the need for updates and antivirus software.

Ait Ouahman (2014) also emphasis the biggest challenges when it is about storing data into cloud: data redundancy, data loss and leakage, data location, data recovery, data privacy, data protection and data availability. Denial of Service (DoS) attacks is the most common and it means that the data cannot be accessed (temporarily or permanently). Phishing attack is another common way of stilling data and it is based on social engineering techniques.

Kodak functioned for decades as a powerful and lucrative photography company. Sullivan (2018) emphasizes that the company declared bankruptcy in 2012 and many photographers lost their photos stored in the Kodak Gallery.

Coming back to advantages, the easiest way to backup photos and videos for users with smart phones is to use Google Photos. According to Hildenbrand, Symons, & Johnson (2020) with a few settings the application will safely and smoothly upload the user's data to the account allocated storage. All necessary settings and steps are described by Hildenbrand et al. (2020). Google Drive gives you 15GB of storage for free. Purchasing one of the most powerful smart phones for taking photos as recommended by Hildenbrand et al. (2020) not only gives the user the possibility to take instant great photos, but also comes with bigger amount of free space on Google account.

Using DropBox for storing data (including photos) is another great cloud option, as recommended by Moreau (2019) and Sullivan (2018). However, care has to be taken, as some companies deny the access to DropBox servers for their employees due to security issues. For professional photographers and also for users with special needs Moreau (2019) lists the best 10 cloud image hosting sites with pros and cons.

There are many options when choosing cloud storage. Microsoft OneDrive is another solution. Samsung offers good cloud storage for people who bought their smart phones and tables.

Retrieving the data

There are several aspects to be considered when retrieving the data over time. First, there is the file format. In 10 years from now, some of the file formats that are now put to storage may not be available for view anymore. There might be no tool to read those files. People might need to convert all their files to newer formats. Second, if files are stored on tens or even hundreds of locations (external disks, CDs, etc.) there is a big effort to retrieve a certain file, unless the files structure is well created and documented. Even if the structure is good enough, it might be too costly to access hundreds of locations to take some files. Third, people might need to search into their files database for certain data. A search engine might not work if the files are spread into hundreds of locations. Let's take for example the face recognition feature. If someone wants to search for a certain person in all locations, then access to all of them is needed.

Popescu (2001) specifies simple image algorithms that can be applied to the photos. Ștefănoiu (2003), pp. 350-362, describes various algorithms and Linux tools that can be used to compress data. However, more complex image processing can be executed with customized Python scripts. They are be used to create albums (also using the location tag), categorize by data when the photo was taken, etc. Russ & Brent Neal (2016), pp. 164-170, pp. 174-177 specify algorithms to adjust the colors and to do nosy correction. However, this implies that the user needs to use specialized software and execute those operations manually on each photo. Many cloud services may do this automatically, saving this processing time.

Care must be taken, according to Schofield (2018), when choosing cloud storage because data might be easy to upload, but not so easy to download. Schofield (2018) and Sullivan (2018) raise the awareness that file format and file metadata can be lost when storing to the cloud.

The raise of artificial intelligence

Cloud services come sometimes with pro-active actions, like for example selecting interesting photos from the past and showing them to the user. Considering that the main

purpose of storing photos is to look at them in the future, this pro-active feature might to extremely valuable for some users.

According to Knight (2017) AI will make it possible to search by the meaning of the content not by specific keywords. Google also provides algorithms to recognize thousands of everyday objects in the uploaded photos.

Features that will make the user life better include: automatic classification of photos, videos and documents based on the subjects (persons appearing in those files), locations and other topics (birthdays, celebrations, traveling, landscapes, family, etc.), automatic creation of albums, facilities to easily search and retrieve documents (mainly photos) out of thousands, removal of duplicated and similar photos, automatic color enhancement, and many others.

Use network attached storage

According to Schofield (2018) to be really safe, you should have more than one copy of each photo, stored in more than one way in more than one place. A year before, Schofield (2017) already explained that a NAS is basically a computer with the slowest processor and smallest memory that the manufacturer can get away with but has bays to hold from one to four hard drives. He pointed that a NAS acts as a backup only if it has at least two copies. If the NAS is used only to free up space on the working computer or laptop, then the data is again in only one place and another backup is needed.

According to Gnanasundaram & Shrivastava, 2012, pp. 51-70 users can take advantage of disk mirroring, also known as RAID 1, which is the replication of data to two or more disks. Disk mirroring is a good choice for applications that require high performance and high availability. Personal memories (like photos and videos) require high availability. However, Schofield (2017) argues against using RAID 1 because this method means putting all data in one single place. NAS software is usually used to synchronize with the working computers. If data is deleted from these working computers, then the synchronization software deletes it also from the NAS.

Matthes (2016), pp. 398-426, describes how to build a local web server that can be used to list your images in a customized way. Python scripts can be used to manage easily large number of files and execute operations on them.

The research made by Klosowski and Santo Domingo, 2020, at Wirecutter, a New York Times Company, revealed that the best NAS on the market to use at home is Synology DiskStation DS218+. It offers encryption, media streaming, remote access, solid data protection, and all the common features that are requested by home users. Klosowski and Santo Domingo, 2020, raise the attention that the new version of the best hard drive to be used with NAS devices (i.e. the Western Digital Red hard drive) present problems. This is also presented in detail by Salter, 2020. By the time this paper was started, the Western Digital Red hard drive was considered the best on the market. This new report is another proof that technology changes and usually, there is not perfect solution for storing data over years.

Lovelace, Penzes, Roa, & Vukoj, (2014) from IBM Corporation provide detail list of software that can be used to monitor the performance of a NAS. Doing this is always a good idea, because NAS hard drives have big storage capacities. Hardware failures might affect a big quantity of data. It is better to prevent this.

Conclusions

Combine all of them together. Considering that all methods bring advantages and disadvantages and there is no best option when taking into account time spent to store, time spent to retrieve, money spent, reliability, data protection, and preserving information, wise is to use multiple methods.

Printing two times per year the best 50 or 100 photos is easy to do and cheap. Doing it regularly decreases the effort for selecting the pictures.

Backing up the computer's or laptop's hard drives to a NAS can be easily done with minimum effort. If the NAS is correctly set, then the backup function can be triggered with a click. Of course, some user might wish to only store important files (personal photos, videos and documents) to save storage space. That might require more settings and

setup. A NAS allows easy backup and store for all devices in the house (computers, laptops, phones, and tables).

Storing to cloud is not so expensive, even if the user selects the premium storage (big amount of space and high-quality photos, i.e. original format). The best is that it can be automatically done. Phones and tables (which are the source devices for most of the files: photos and videos) can be setup to automatically upload files to the cloud. Additionally, the many cloud services offer nice features for searching and classifying documents.

Selection of most important files (photos, videos and documents) can be store also on CDs and DVDs. Because writing and reading data to and from optical disks is slow or even very slow, users might use this option in 2 ways: either do it regularly, as with printed documents, or do it only for most important documents.

Because SD cards and USB flash drives need periodical refresh, despite of their small size, this option can be used with relatively large capacity devices (let's say 256 or 512 GB). That to ensure a not so big number of devices that require refresh every four or five years.

In the same way, users can select to store their data on one or two 2 TB external hard disks. Because of big capacity, data can be easily searched for. The read and write speed is significantly bigger as compared to optical disks, SD cards and flash drives. Big capacity comes with higher risk in respect to hardware failure.

Data is stored for decades not just to sit somewhere, but to be easily retrieved. When having thousands or even tens of thousands of photos and videos, read speed and search options and data classification features are very important. These can be accomplished with cloud storage, fast and high capacity hard disks (either external or as part of a NAS) and high capacity SD cards.

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