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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON CONSUMERS EXPERIENCE: THE
CASE OF MC DONALD TOUCH SCREENS

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Abstract

This paper has the aim of investigating through a questionnaire, the reaction of people and their adaptation to the “Artificial Intelligence” or “AI” and how it can have an impact on social interaction.

More specifically, we wanted to investigate the reaction of people going to Mc Donalds’ restaurants where new touch screens have been placed to take the orders instead of humans behind the counters. It appears evident from data that older people feel uncomfortable in using these new touch screens, they are afraid of making mistakes or, in other cases, they would prefer to be served, as it has always been.

The reaction is extremely positive among youngsters under thirty; they find it faster and easy, in few cases they prefer them because they do not have to talk to anyone. This last consideration opens a huge debate on how technology has been affecting more and more the way people interact in reality or virtually and their habit to do it.

Key Words:

Artificial Intelligence, AI, technology, service, human relations, fast food.

1. Introduction

The inspiration for this work arose from hearing comments of people that used for the first time the touch screens introduced in several Mc Donald's restaurants in big cities. These touchscreens have been introduced to take the orders instead of the staff behind the counter.

In 2016, in fact, Mc Donald started to introduce a new concept of restaurants in California, U.K., Australia, Canada, Germany and France. They revealed their new concept by talking about a "new customer experience". The restaurants have been renewed with new modern interiors and wi-fi, but the most important change has been the table service, as explained earlier.

These kiosks accept debit and credit cards, Apple Pay and Android Pay. A crew member brings the food to customers directly at the table, after the order has been placed and the amount paid. The further step of Mc Donald would be also to add the mobile order.

The interesting element to highlight is the strategic approach of Mc Donald: they decided to "ask the customer to fit around our business model" as declared by the Mc Donald CEO Steve Easterbook. The idea behind is to introduce an innovation and lead customers to accept it and to hopefully appreciate it.

In the first experiments, results demonstrated Mc Donald was right. McDonald's reported that in the U.K. the new restaurants have registered 8% sales growth in the stores and 4% in the drive-through. The Managing Director Paul Pomroy commented: "A Big Mac tastes better in a reimaged restaurant. It just does".

The idea is to leave more initiative to customers, so that they don't have to spend time queueing, often with kids, but families can already take a seat and only one goes to the touch screen to order and pay, since right after some Mc Donald staff will serve the food directly at the table.

Mc Donald “converted” the counter crew into people dedicated to the “customer experience” or what they’ve called the “hospitality experience”; but how to convince public and introduce this change? Mc Donald run local tv and advertising to introduce the big change and for those who could not attend directly, they provided also the virtual reality.

At the first restaurants where they introduced the touch screens, moreover, they dedicated part of the crew to support customers, at least for the first period.

2. Objectives

This paper has the aim of investigating through a questionnaire, the reaction of people and their adaptation to the “Artificial Intelligence” or “AI” and how it can have an impact on social interaction.

More specifically, we wanted to investigate the reaction of people going to Mc Donalds’ new restaurants and measure their level of adaptation and appreciation of the new format. In addition, the study is investigating on the possible common reaction and behaviour of certain targets, for example if there is a correlation between age and reaction, so if for example youngsters are reacting better than adult people and especially which are eventually the reasons behind this trend.

3. Conceptual Framework and Literature Review

Starting from this specific application of Artificial intelligence in Mc Donald, we have also gone deeper in the observation of Artificial Intelligence experiments in other fields, not only restaurants, and we have considered the implications that the introduction of artificial intelligence may have on human relations in several fields.

When mentioning “Artificial Intelligence” or “AI”, what do we really refer to?

The concept itself is very intriguing and debated; the idea of creating machines that are as smart as humans finds its origins already at the time of ancient Greeks, who had myths about automatons created by the gods.

However, real interest and deep researches about Artificial Intelligence started in the fifties.

As Burnett wrote: “Disruptive times call for staying attuned with consumers’ changing needs and lifestyles. We are at the brink of the 4th industrial revolution, which will undoubtedly shape the future of many aspects of consumers’ lives, including how we shop. Thus, the time for keeping a close eye on new technologies and innovating for the future has never been better.” (Burnett J., *Retail today and tomorrow: Innovating in the age of disruption*, Nuremberg, 2017).

The AI has acquired very much importance in the last decades and it has been accelerating the pace of its development especially in the last years, however the scientist considered as the “father” of computer science and Artificial Intelligence is Alan Mathison Turing (23 June 1912 – 7 June 1954), born at the time of the first World War and with a crucial role during the Second World War: he intercepted and cracked coded messages that enabled the Allies to defeat the Nazis in many decisive engagements, including the Battle of the Atlantic, and in doing that, he helped to win the war.

It has been estimated that this work shortened the war in Europe by more than two years and saved over fourteen million lives.

The decades has been passing and the role of technology has been more and more important in “transforming industries, challenging traditional marketing channels, and providing digital avenues for dynamic growth” (Crittenden et al., 2017).

A shared worry among people, however, is the threat of AI as a reason for companies to substitute employees with machines.

Research predicts that one-third of roles could be taken over by technology; so in this scenario, how will this change re-shape the workforce, and HR's role in managing it? (Personnel Today, 2015)

However, the fear of machines taking over humans jobs is not new; this topic started to be relevant and actual already at the times of the Industrial Revolution, when machines had been progressively replaced blue-collar jobs.

With the increasingly development of AI this topic has begun even more serious and the threat bigger.

About 47 per cent of current jobs in the USA are at high risk of computerization over the next 20 years, according to a study by researchers at Oxford University and Deloitte (Frey and Osborne, 2013).

Also Martin Ford recently wrote a book on the same topic about the threat of lacking jobs for humans: "Rise of the robots – technology and the threat of a jobless future."

On the other hand, it is also agreed by the majority that technology helps to simplify our lives and daily activities, so this trend will surely not be stopped only because of the threat of making humans redundant.

Several pieces of literature have been written around Artificial Intelligence discussing about the future of the Consumer experience and the possible further evolutions strictly linked to what technology can offer. However, a recent study has investigated on how newly evolved touchscreen technologies affects consumer behaviour. They found interesting differences in

consumer intentions and decisions in relation with the kind of device they were using as support and the kind of and product they were focusing on.

One of the main important result is that “touchscreens evoke a stronger experiential thinking style, while desktops evoke a stronger rational thinking style. Moreover, the findings suggest that greater experiential thinking enhances a consumer preference towards hedonic products, while greater rational thinking endorses utilitarian products.

Together, this pattern leads touchscreen users to prefer hedonic products over utilitarian products.” (Ying Z., Jeffrey M., *Getting in touch with your thinking style: How touchscreens influence purchase*, New York, Elsevier (2017): 51-58)

However, our research aims to explore the impact of touchscreens not related to “products” shopping, but to the experience of “ordering food”, in a place where there have always been persons to do this activity, not only in terms of functionality of course, but as the progressive lack of human interaction.

“Some claim that this may change drastically with the widespread introduction of AI technologies leading to massive job reductions and bringing us towards Huxley's *Brave New World*.” (Makridakis, Spyros, *The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms*, “Futures”, n. C XC (2017): 46–60. <https://doi.org/10.1016/j.futures.2017.03.006>).

But this job’s reduction could, at the same time, possibly bring to job quality improvement: since most of the easy and manual tasks will be managed by the AI, people will have the chance to focus on more complex ones.

The support of AI will imply that people will develop new skills that would result in better quality jobs, working in a smarter way with less efforts and more productivity.

Will this bring us to a better life-work balance, improving the quality of our life, work and consequently to our behavior, eventually finding new time to be spent with people since we will progressively reduce the time spent for repetitive time consuming activities thanks to the AI? This is an interesting debate to discuss on.

4. Research question.

The aim of this research is to “measure” through a questionnaire, the reaction of people and their adaptation to the “Artificial Intelligence” or “AI” and how it can have an impact on social interaction.

More specifically, we wanted to investigate the reaction of people going to Mc Donalds’ restaurants where new touch screens have been placed to take the orders instead of humans behind the counters.

Starting from Mc Donald perspective i.e. to “impose” a new business model that has been then translated to a new “customer experience”, we want to understand the initial reaction of consumers in front of this change of service and the eventual correlations emerging from the analysis. Are consumers feeling comfortable with these new touchscreens? Are they under pressure? Which are the reasons to be positive towards this innovation? Or, if not appreciated, why are consumers rejecting this new form of collecting the orders?

5. *Research Model*

To investigate around the abovementioned topic, as first step, we chose to work in arranging a qualitative survey using an on line questionnaire focused on the following key issues:

- The socio-demo profile
- At what extent the usage of the touchscreen is “new” for the interviewed at the time of the interview
- Which feelings the interviewed felt in doing the order by himself and his/her reasons
- The positive effects and feelings of ordering by the touchscreen, if any
- Finally a question to understand psychologically how they welcomed or not the innovation by asking directly their feedback about substituting men and women with machines and the possibility we will feel the nostalgia of smiles and jokes.

6. *The Method*

In order to test the research questions, a sample of 150 interviewed persons has been considered and results elaborated. The interviewed persons were asked to reply to an on-line questionnaire.

The basic characteristics of the sample are shown in Table 1.

Table 1. Panel profile

Gender		Average age		Scholarisation	
Females	53%	28,5	Secondary school	13%	
Males	47%	31	high school	36,5%	
			Degree	47%	
			master	3%	

Since we were more interested in basic psychological processes than generalisations, the sample size was considered appropriate (Grewal et al., 2000; O’Cass, 2000).

The survey was thought and run according to the following procedure:

- a) Definition of an on-line questionnaire, based on the abovementioned aim and key issues to be investigated, developed by the members involved in this research.
- b) The prerequisite of the interviewed people, was the experience already done at the McDonalds’ Restaurants with their Kiosks, the new touch screens display that let the customer order his meal.

Eliminato:

This selection brought to the following features of the sample:

Size: “150” people; age range: “14-69”, age average “30”; gender: 53% females, 47% males.

- c) Field survey: the interviewed people city of living was Turin in the north of Italy.
- d) The duration of the questionnaire was approximately : three minutes, structured in nine questions.
- e) Collection of the replies, data processing and standardisation of the output format.

7. Findings

Out of the 150 people interviewed, the frequency of visiting a Mc Donalds’ restaurant was the one shown in table 2.

Table 2. Frequency of meal at Mc Donalds

76%	once every 3/4 months
21%	once a month
3%	once a week

Out of the 150 interviewed people, we investigated on how many times they had already used the screen to order, in order to understand at what extent they could have already overcome the initial barrier of not knowing how to do and of the “surprise” effect that can be a reason of anxiety. The results are shown in the table 3.

Table 3. Experience with the touch screen

15%	It's the first time
30%	1-2 times
55%	3 or more

We have then investigated on their reaction; if they liked this new solution or not.

The results are shown in the table 4

Table 4. Consumers' reaction

27,3%	It makes me anxious
27,3%	I don't care
45,4%	I like it

Out of the group who replied “It make me feel anxious”, that is the 27,3% of the total panel, the average age is: “44” with a minimum age of 19 and a maximum age of 69.

Out of the same group, the 68% was at the first or second experience with the touchscreen; the rest had already used it three or more times.

Out of this group, the main reason to feel anxious is the fear to make mistakes (53,6%) and the second is the preference of being served (46,4%).

Out of the group who replied “I like it”, that is the 45,4% of the total panel, the average age is: 24 years old with a minimum age of 15 and a maximum age of 51. Out of the same group, the 22% was at the first or second experience with the touchscreen; the rest had already used it three or more times. At the question “why do you like it?”, the 90% replied that “it is faster and

more comfortable”, the 3% replied that in this way “I don’t have to speak with anyone” and the 7% “other reasons”, such as “I have more time to decide”...

Out of the group who replied “I don’t care”, that is the 27,3% of the total panel, the average age is: “25” years old, with a minimum age of 14 and a maximum age of 51.

Out of the same group, the 61% was at the first or second experience with the touchscreen; the rest had already used it three or more times. Here below the recap of the results, in the table 5:

Table 5. Replies recap

	"I like it"	es me a	"I don't care"
% on total sample	45,4%	27,3%	27,3%
Average age	24	44	25
Min-Max age	15-51	19-69	14-51
First or second experience	22%	68%	61%
Third or more times ex.	78%	32%	39%
Reason to feel anxious			
Fear of making mistakes		53,6%	
Preference of being served		46,4%	
I like it because it's faster and more comf.	90%		
I don't have to speak with anyone	3%		
Other reasons (ex. it gives me more time to decide..)	7%		

We furtherly elaborated the results by segmenting the panel according to three age bands: under 30, from 30 to 50 and over 50.

The results are the following, as shown in table 6:

Table 6. Age bands & reaction

	< 30	30-49	≥ 50
I like it	41%	4%	1%
It makes me anxious	7%	10%	11%
I don't care	22%	5%	1%

As next check, we have compared the replies of females with the ones of males, to see if any interesting trend could emerge.

The results are the following, as shown in table 7:

Table 7. Data by gender

	Females		Males	
	% on tot.	% <30	% on tot.	% <30
I like it	44%	58%	47%	60%
It makes me anxious	26%	9%	29%	11%
I don't care	30%	33%	24%	29%

Apparently there are not significant evidences of a different attitude between “males” and “women”, but it appears clear the significant percentage of youngsters appreciating the new touchscreens; the 94% of females that declared “I like it” is under 30 years old and the 85% of males who gave the same reply is under 30 too.

8. Discussion

From the data it appears clear the correlation between the younger age and the positive feedback on the new Mc Donald touchscreens. The 41% of the interviewed people appreciating the new touchscreens is under 30 years old. Out of the total who replied they like the new screens, the 90% is under thirty!

Moreover, the 78% of this group, has already experienced three or more times the screens, so their positive reaction can also come from having overcome the initial barrier of not knowing the system, due to the novelty.

They find the touchscreen faster and more comfortable (90% of the replies among who appreciates the screens).

The group who feels anxiety because of the touch screens and no more the human support in ordering, is the 27,3% of the total interviewed people and they have an higher average age: 44 years old. One of the elements that can also bring to this result is that the 68% of them has used the touch screens only once or twice.

People were also requested to express an opinion on the fact that AI machines are also preventing customers to receive a smile or a greeting. It emerged that they are expecting a “fast” service so they do not really mind and moreover, the 8% noted that Mc Donald’s staff is not smiling so much normally, so the touch screens are not affecting particularly the user experience from a human relation point of view. The focus is being served and make it quick.

9. Conclusions

The introduction of the AI in the Mc Donalds’ restaurants has improved the service in terms of timing, thus strengthening more and more the “core” concept of the “fast food”. On the other hand, the more the customers are older the more they struggle with technology and they feel a sense of anxiety whereas they were used to the usual order system directly to a person and to find the usual menu. Mc Donald customers do not expect to create a relationship with the staff but in general they recognize the introduction of machines will step by step reduce the number of people actually working and without knowing, so far, if new jobs will be created thanks to this way of applying technology.

10. Limitation

This survey appears to have few limitations that we are going to highlight and that might be a stimulus to be solved in a future similar research.

The first one is the age distribution, in fact we could not reach enough aged people, but many interviewed people belonging to the university environment are under thirty.

The second limitation is the method of data collection. For our convenience and in order to collect a remarkable number of data, we have opted for an on line questionnaire. The on line questionnaire allowed us to reach 150 people in a short time but on the other hand, it was automatically addressed to people that normally use technology and devices. To be closer to

the reality we should have done this survey on field, directly at the Mc Donald restaurants, by interviewing random people and not automatically filtering them by sending them an email to fill in an on line questionnaire.

The third element that can be considered as a limitation in this survey is the “local” approach. In fact the study has been conducted only in Italy, whilst it could have been interesting to measure the different reaction among different countries.

In this case we would not only have measured the level of appreciation and adaptation at the new kiosks, but we might have also tried to compare the results with the level of digitalization of the different countries and see if we could find any relevant correlation.

10. Further research

Step by step technology has been introduced into several fields, even in restaurants, however we could grasp that in the case of Mc Donald, customers are not expecting a cured treatment, rather than a fast service, with the less queue possible.

A further research could be to investigate if customers have or not the same attitude in case of services where the person has always played an important role, for example the “barman”.

In this case there is a new Bar, the “Makr Shkr”, where users can create an almost limitless number of alcoholic and non-alcoholic drink combinations by accessing a simple app. The cocktail creations will then be assembled by two robotic arms, whose movements - shown on a large display positioned behind the bar - mimic the actions of a bartender, from the shaking of a martini to the thin slicing of a lemon garnish to the muddling of a mojito. Makr Shkr is a great example of how advanced technologies can impact the interaction between people, products and personalization of the offer, but on the other hand it has

completely cancelled the interaction between people and the Barman, an appealing character that has been also the protagonist of a famous Hollywood movie with Tom Cruise, in the dreams of thousands of dreaming girls all around the world.

11. Managerial Implications

This research offers hints for reasoning on how and if introducing AI in companies instead of humans. The discussion is either a matter of productivity but also of the kind of service and relation every Brand wants to establish with its customers.

Mc Donald has demonstrated it has the strength to “impose” changes and innovation and customers are ready to accept them from such a strong Brand as Mc Donald. But, at what extent a small medium company would have the same feedback? How hard is for small medium company to introduce innovation and to change business model? Which are the risks? How established must be the brand to disregard customers reactions and decide to change dramatically?

This issue is of extreme importance and actuality on both side in terms of managerial implications; one implication is the right moment to innovate and how to innovate by the companies towards the final customers, as we investigated on Mc Donald’s restaurants case, on the other side, the implication is towards the employees and the risk to make them being redundant if the company cannot find new jobs for them.

This last point has been discussed over the years and surprisingly the perspective has been changing a lot; especially because marketers and researchers could not forecast a certain development of technology and its application on several fields. The expectations were to see

low profile jobs becoming redundant but at the same time it was considered very difficult to replace human perception, as discussed by Levy and Murnane in “Why People Still Matter” (2004), referring also that was unluckily to be thought about automation in driving but six years later, in October 2010, Google announced that it had modified several Toyota Priuses to be fully autonomous (Brynjolfsson and McAfee, 2011) and from that moment onwards the automatic driving has been furtherly developed by reaching important results.

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13. Questionnaire

1. Gender (Male or Female)

2. Age _____

3. Level of education (No title/ compulsory school / secondary school / University Diploma /three years university diploma/ specialised school after university/ Master/ other _____)

4. How often do you eat in Mc Donald?

Once every 3/4 months once per month once per week

Twice or more per week

5. How many time have you already ordered through the screen without asking to the Mc Donald staff?

It' s the first time 1-2 times 3 or more

6. How did it go?

It makes me feel anxious I don't care I like it

7. If "it makes you anxious" and you don't like it, why ?

I'm afraid of making mistakes I'd like to be served Other

8. If you like it. Why?

It's faster and comfortable I don't have to speak with anyone

Other reasons _____

9. By substituting men with machines, don't you think we will miss some smiles and jokes that make our day nicer?

Open reply:
