

Master Thesis Master of Science in EBA Finance and Strategic Management Copenhagen Business School A.Y. 2016/2017

## The "Make or Buy" dilemma in the Gig Economy era:

A Transaction Cost Approach to Upwork and Amazon Mechanical Turk

#### Nina Di Sabatino

15<sup>th</sup> September 2017

Supervised by:

Morten Møller Amstrup - Department of Strategic Management and Globalization

Number of pages and characters: 76 - 115,862



# Abstract

Over the last decade, the world experienced an exponential growth in numbers and importance of On-Demand platforms, those digital marketplaces that match independent workers with companies or individuals in need of services. Known as Gig Economy, the phenomenon is disrupting the current way of doing business, by offering enormous opportunities to companies and individuals as well as exposing them to significant risks and concerns.

The forecasted impact Gig Economy will have in 2020 is comparable to an increase of 2% in global GDP, turning it to be a "hot topic" in current researches and academic papers. Despite the vast contributions scholars carried out on the implications the phenomenon will determine, little is known on the triggers that push companies to recur to On-Demand platforms. The contribution of this thesis, therefore, lies in understanding Gig Economy from a company perspective, with the aim of finding out the circumstances in which firms choose freelancers rather than employees. Beyond being an interesting topic, the work will explore the potentials of Gig Economy, its value offering and its relevance in the nowadays and future scenarios, moving the research on the field a step ahead.

The main theoretical foundation the author will adopt is Transaction Costs Economics while the means by which the study will be conducted is the analysis of the daily usage of the two most commonly utilized On-Demand platforms i.e. Amazon Mechanical Turk and Upwork.

<u>Keywords:</u> Gig Economy, On-Demand Platforms, Crowd work, Transaction Cost Economics, Amazon Mechanical Turk, Upwork



# Table of Contents

Abstrac	t	1
Table of	Contents	2
Table of	Figures	4
Table of	Tables	4
1. Int	oduction and Motivation	6
1.1.	Introduction	6
1.2.	Thesis statement	
1.2	1. Problem Definition	
1.2	2. Research Questions	
1.2	3. Definitions and acronyms	9
1.3.	Thesis structure guide	10
2. Bao	kground: drivers, evolution, and impact of Gig Economy	12
2.1.	Gig Economy: an overview	12
2.2.	The working principle	14
2.3.	On-demand platforms	17
2.3	1. Amazon Mechanical Turk	
2.3	2. Upwork	19
2.3	3. A comparison of the two platforms	20
2.4.	The organizational point of view	23
3. Me	thodology	
3.1.	Research purpose	
3.2.	Research philosophy	29
3.3.	Research approach	
3.4.	Research design	

#### CBS COPENHAGEN BUSINESS SCHOOL HANDELSHØJSKOLEN

3	8.5.	Res	earch methods	.32
	3.5	.1.	Literature and Theoretical review	.34
	3.5	.2.	Data collection	.35
3	8.6.	Qua	lity of research	.38
	3.6	.1.	Reliability	.39
	3.6	.2.	Validity	.39
3	8.7.	Lim	itations	.40
4.	Ana	alysi	s and Findings	.42
4	ł.1	Pro	positions formulation	.42
	4.1	.1.	Introducing Transaction Cost Economics Theory	.42
	4.1	.2.	A transaction-based approach of Gig Economy	.44
4	ł.2.	Ana	lysis of data	.47
	4.2	.1.	Amazon Mechanical Turk: overview	.47
	4.2	.2.	Upwork: overview	.53
	4.2	.3.	Assessing uncertainty in transactions	.57
	4.2	.4.	Assessing frequency in transactions	.59
	4.2	.5.	Assessing asset specificity in transactions	.62
4	ł.3.	Fine	dings	.64
5.	Dis	cuss	ion	.67
5	5.1.	The	transaction 2.0	.67
5	5.2.	Rec	ommendations	.70
5	5.3.	Sug	gestions for further research	.73
6.	Сот	nclus	ion	.75
Ref	feren	ces		.77
Ap	pend	ix 1:	APPENDIX 1 - AMT_Input	.81
Ap	pend	ix 2:	APPENDIX 2 – AMT_Analysis	.82



Appendix 3: APPENDIX 3	- Unwork Analysis	
hppendix 5. m r Litom 5	opwork_marysis	 

# **Table of Figures**

Figure 1 - Thesis structure guide	10
Figure 2 – Gig Economy Interest over time [2009 $ ightarrow$ 2017]	13
Figure 3 – On-demand platforms by market entrance and nature of tasks	15
Figure 4 – On-demand platforms by task Volume and Cost (Estimation)	16
Figure 5 – The working principle of On-Demand platforms	17
Figure 6 - A screenshot of AMT	19
Figure 7 - A screenshot of Upwork	20
Figure 8 – A systematic process of combining data	33
Figure 9 – Filters in Upwork	37
Figure 10 – An example of client's profile and feedback in Upwork	38
Figure 11 - A graphical representation of Propositions	46
Figure 12 - Distribution of countries by Upwork Tasks and TEP index	59

# Table of Tables

Table 1 – AMT and Upwork in comparison	.22
Table 2 – Main indicators of daily usage of AMT	.47
Table 3 – Main indicator of usage of AMT	.48
Table 4 – Usage of AMT by frequent Keywords	.49
Table 5 – Top10 Keywords in AMT	.50
Table 6 – Top Requesters in AMT	.51
Table 7 - Top14 companies by period spending in AMT	.52



Table 8 – Daily usage of Upwork by task categories	53
Table 9 – Average daily tasks in Upwork per countries	54
Table 10 – Top50 clients in Upwork by total spending	56
Table 11 – Frequency of activities by companies in AMT	60
Table 12 – Hire/Job posting ratio by clients in Upwork	62
Table 13 – Average centeredness of activities by companies in AMT	63



# 1. Introduction and Motivation

## 1.1. Introduction

One of the most relevant trends that the world is facing nowadays is the rise of Gig Economy – i.e. "the collection of markets that match service providers to consumers of on-demand services on a gig (or job) basis" (Donovan, Bradley & Shimabukuru, 2016). The phenomenon comprises those digital platforms whose value proposition is to match the enormous pool of independent workers with individuals or companies in need of services, and it is growing so rapidly that is likely to revolutionize the business rules by posing interesting challenges to individuals, organizations, and policy makers.

Though, independent work has nothing to do with newness; it is impossible to trace its origin, but it is sure to affirm that it has never reached such levels of diffusion. On one hand, technological progress has allowed the rise of many on-demand companies that match in real-time labor supply and demand. On the other, the intensifying interest in work-life balance and the quest for flexibility, independence and intermittence are making this option appealing for millions of people worldwide. The result is that the digital platforms like Amazon Mechanical Turk or Upwork are creating larger, more transparent and efficient marketplaces, transforming a vast percentage of the traditional and structured workforce into independent and autonomous workers with short-term engagement. More than being a simple practice shift, Gig Economy will open the way for disruptive changes in how we work, relate, create value in the economy and compete for success.

Right now, it is estimated that 20 to 30 percent of the working-age population in the United States and the EU-15 countries are engaged in some form of independent earning, potentially impacting with an economic value of \$2.7 trillion in annual GDP in 2025 (Manyika et at., 2015).

And although these data seem to be huge, the rapid growth of these platforms suggests we have only just begun to see their future impact. The advantages that these



marketplaces offer are multiples so that 540 million of individuals could benefit from them in 2025 (*ibid*). They enlarge opportunities for people willing to find a job or raise their salaries and offer autonomy and flexibility to workers that aim at them. They increase the availability of services, improve the matching between needs and activities, and offer to companies the possibility to hire freelancers by saving in employment costs. In long-term, they may cushion unemployment, improve labor force participation and stimulate demand and productivity; but still, benefits do not come without costs.

The lack of regulation, discipline, and income security measures; the little awareness and training of individuals, companies and policy makers; the position of excessive strength of some platform companies; they all contribute to increasing insecurity, making the use of such platforms less frequent and beneficial than forecasted. Indeed, only addressing these challenges could make the diffusion of independent work through Gig marketplaces a real, convenient and feasible option for players worldwide.

Given the relevance that Gig Economy is assuming right now, scholars are heavily discussing the topic. Though, researchers focus on the individual side of the phenomenon and on the legal issues that the use of such platforms have created, overlooking the consequences that it has for organizations. A lack of consideration of the effects of Gig Economy may seriously compromise the effectiveness of businesses since the benefits that it offers must be exploited as much as possible to succeed in long-term.

At this regard, the contribution of this thesis lies in understanding the Gig Economy phenomenon from a company perspective, with the attempt of explaining the factors that influence firms' choice to recur or not to On-Demand services. In order to do this, the author chooses to analyze the usage of the two most popular marketplaces – Amazon Mechanical Turk and Upwork – and apply Transaction Cost Economics to them. By assessing the common features of the current use of those platforms by companies, the thesis will provide an overall understanding of the current state-of-art of Gig Economy, its value offering and its relevance in the nowadays and future scenarios.



#### 1.2. Thesis statement

In this section, the author will define the problem and the motivation underlying this thesis and state the research questions that the work is designed to cover. Definition and demarcation will be provided, so as to set the ground for the research and simplify the reading process.

#### 1.2.1. Problem Definition

As there is little research on the topic, the main goal of the thesis is to combine and apply existing theories from different fields with data gathered in different forms to create a unique framework that contributes to the young field of Gig Economy.

The ease, flexibility, and extent of Gig Economy platforms enlarged the possibility of traditional firms to outsource employees rather than hiring them in long-term. This paradigm – consequent to the reduction of transaction costs – can be broken down into a new "make or buy" decision, challenging the traditional business rules, pillars, and habits. In the future, the consequences of this shift may completely redefine the boundaries of firms and the industrial structures, shaking their concept of "human capital" and eventually transforming organizations into companies without employees.

#### 1.2.2. Research Questions

More in depth, the scopes of this thesis are to (1) understand the extent to which Transaction Cost Economics theory can be used to explain the changing industrial structures; (2) contextualize findings to understand how the rise of the On-Demand economy will affect the boundaries of firms; (3) provide suggestions and recommendations to make Gig Companies and traditional businesses operate and cooperate. In order to be in line with the scope of work, the thesis pursues to answer two distinct but consequent research questions.

<u>RQ1</u>: To what extent the Transaction Cost Economics' dimensions of uncertainty, frequency, and asset specificity can be useful to explain the "make or buy" dilemma in the Gig Economy scenario?

# <u>RQ2</u>: How will firms' boundaries and practices be shaped to make competition sustainable in the future?

One assumption is worth to be stated for answering the Research Questions. Gig Economy definition usually assembles two types of platforms: "crowd work" and "work on-demand via apps" platforms. Since "work on-demand via apps" marketplaces address individuals' needs rather than organizational needs, this work will be hinged on the crowd work phenomenon.

Considerations for answering the Research Questions:

- Tracing the evolution of Gig Economy and its relevance in the nowadays world.
- Deciding the appropriate philosophy of science, strategy, and method.
- Gathering data in different forms and from multiple sources, as explained in the Methodology.
- Defining and explaining whether TCE dimensions influence the "make or buy" decisions in the digital platforms era. [RQ1]
- Contextualizing and generalizing the findings in a realistic scenario through contingent theoretical frameworks and data. [RQ2]

#### 1.2.3. Definitions and acronyms

All the concepts used in this thesis will be defined and explained throughout the text, in order to avoid confusion and link the definitions to their use. A few initial notes:

• Gig Economy and On-demand platforms are used as synonyms.



- Crowd work is sometimes used as synonym of Gig Economy, although it represents a subcategory of the entire phenomenon.
- When referring to TCE, the author means Transaction Costs Economics Theory.
- When referring to AMT, the author points at Amazon Mechanical Turk.
- The acronym TEP is intended as Temporary Employment Protection index.
- When the author speaks about HITs in Amazon Mechanical Turk, it refers to HITs groups and not HITs tasks.

## 1.3. Thesis structure guide

FIGURE 1 - THESIS STRUCTURE GUIDE



SOURCE: OWN-CREATION

This thesis consists of six main chapters, represented graphically in Figure 1.

Following the *Introduction & Motivation* part explaining the framework of the research, the work will proceed with a *Background* Chapter, aimed to trace the rise, the evolution and the impact of Gig Economy for companies nowadays. Hence, it follows the description of the *Methodology* aimed to use.



The paper proceeds with the *Analysis and Findings* Chapter. By applying Transaction Cost Economics to the Gig Economy context, Propositions will be deduced. Hence, the author will: (1) analyze how different data and multiple sources can shed light on the "make or buy" dilemma in the digital platform era; (2) deduce findings.

It follows Chapter five, *Discussion*. Its role is to further explore the topic, forecasting a future scenario where Gig and traditional companies operate and evaluating how other theoretical frameworks can clarify these developments. Nevertheless, implications of the findings will be explained and suggestions for further research presented.

Finally, the thesis proceeds to Chapter six, *Conclusion*.



# 2. Background: drivers, evolution, and impact of Gig Economy

The aim of this Chapter is to provide the reader with a general knowledge of the Gig Economy phenomenon; in order to make the work comprehensible, the author will make use of existing scholarship to (1) provide an overview of the scenario, (2) explain the working principle of the platforms, (3) define the characteristics of some marketplaces and (4) depict the pros and contra from a company perspective.

### 2.1. Gig Economy: an overview

"Gig Economy" refers to "the collection of markets that match service providers to consumers of on-demand services on a gig (or job) basis" (Donovan, Bradley & Shimabukuru, 2016). It includes individuals "hired under 'flexible' arrangements, as 'independent contractors' or 'consultants,' working only to complete a particular task or for a defined time" (Friedman, 2014).

The term has been coined in 2009 when the founder of an American opinion website, Tina Brown, defined for the first time the phenomenon of "Gigs" and the shift in labor practices that the US was experiencing. From that point on, the interest in the new economic model started to rise, though it was only in 2015 when the world began to evaluate it critically and to recognize the key role that it plays in the contemporary Economy.

Figure 2 shows the total search-value of the word "Gig Economy" on Google from 2014 to 2017, depicting perfectly the interest Gig Economy is rising nowadays.



#### Figure 2 – Gig Economy Interest over time $[2009 \rightarrow 2017]$



Source: Google Trends (2017).

The term is often associated to Sharing Economy, but the two concepts differ. Sharing Economy comprises those platforms whose activities are aimed to cut costs by sharing actions that would have done anyway. It refers therefore to "shareable goods", namely the ones that "systematically have excess capacity" (Cherry & Aloisi, 2016; Benkler, 2004). Gig Economy, instead, includes those "freelance labor practices facilitated by technology, based on flexibility and intermittence, and aimed to create an efficient form of capitalistic firm" (Cherry & Aloisi, 2016).

Several factors have played an important role in driving the evolution of Gig platforms. First, the global financial crisis has challenged consumption; as a response, many individuals found in these platforms an easy way to top up their salary in times of crisis: they are college students, at-home workers, moms, dads, military spouses, vets, retirees. Besides those that recur to Gig services for necessity, many independent workers do it by choice; the increasing interest in work-life balance and the quest for flexibility and independence made Gig Economy an appealing solution for many (Frei, 2009).

All that is required to perform gigs is a computer, high-speed Internet connection, and specific skills relevant to the work project on hand. It has hence been the technology the primary driver of the diffusion of on-demand platforms. The internet has made it easier for people to connect and coordinate activities, facilitating the evolution of freelancing by overcoming barriers like trust, transaction cost or reputation.

Per a McKinsey report of October 2015, in US and EU-15, 20-30% of working age population (around 162 million of people) are currently committed in some forms of independent work. Even if now only 15% of them are using digital platforms to find jobs,



by 2025 up to 540 million of people (more than 7% of the current world population) could benefit from online platforms. Therefore, Gig Economy could add by 2025 \$2.7 trillion, or 2%, to global GDP and increase employment by 72 million full-time equivalent positions (Manyika et at., 2015).

## 2.2. The working principle

Gig Economy comprises two forms of work: "crowd work" - referred to "working activities that imply completing a series of tasks through online platforms" (V. De Stefano, 2016) – and "work on-demand via apps" – namely "a form of work in which the execution of traditional working activities such as transport, cleaning and running errands [...] is channeled through apps managed by firms that also intervene in setting minimum quality standards of service and in the selection and management of the workforce" (V. De Stefano, 2016; Cardon and Casilli, 2015; Kessler, 2015; Said, 2015; Smith and Leberstein, 2015)

While the former could potentially link an indefinite number of individuals and firms through the internet on a global basis, the latter only matches supply and demand online for activities that are then performed locally (offline).

Nonetheless, in both forms, the nature of the work performed may vary in accordance with the degree of autonomy and complexity. In general:

- *Micro tasks*: generally high volume and low pay rate per task, comprises menial and heavily automatized gigs (e.g. find prices in shops for competitive products, fill high numbers of surveys...)
- *Macro tasks*: high volume and still low rate of pay, automated in the process with a small degree of "human intelligence" (e.g. test a website and provide feedback, find a list of competitors for this service...)
- Simple projects: typically in crowd work, high rate of pay and low volume, generally require human intelligence and interaction with the hirer (e.g. design a logo, website...)

*Complex projects*: almost only in crowd work, they are single project with high payments where human intelligence is the key and interaction with the hirer fundamental (design a marketing campaign, build a software...) (Frei, 2009).

Basing on these characteristics or on a mix a mix of those, many on-demand platforms arose in the last decade, making the competitive arena highly pressured but still with huge potentials for growth. Figure 3 traces the rise of the platforms as well as it clusters the marketplaces by nature of work.



FIGURE 3 - ON-DEMAND PLATFORMS BY MARKET ENTRANCE AND NATURE OF TASKS

Source: Own-creation; Inspired by Frei, B. (2009).







#### FIGURE 4 – ON-DEMAND PLATFORMS BY TASK VOLUME AND COST (ESTIMATION)

Source: Own-creation; Inspired by Frei, B. (2009).

Although the diversity in the sector, value proposition, and players, all platforms starts from the same working principle and personalizes the functionalities according to specific needs.

In general, Gig workers enter formal agreements with the platform provider to perform services to the Gig company's clients. The agreement is unilaterally set by the Gig company and it usually excludes an employment relationship between worker and platform provider as well as worker and platform customer. Meanwhile, clients request services through an Internet-based platform or smartphone application that allows them to post the description of the task. Workers engaged by the on-demand company provide the requested service and are compensated for the jobs. Once concluded the task, both workers and customers provide feedbacks and rating to the counterpart, a high-powered incentive for both parties that reduces the need for internal control mechanism. Finally, the platform provider earns in the form of service fee or by offering additional services (V. De Stefano, 2016).

Figure 5 summarizes graphically the above-described working principle.



#### FIGURE 5 – THE WORKING PRINCIPLE OF ON-DEMAND PLATFORMS



SOURCE: OWN-CREATION; INSPIRED BY HENTEN, A. H., & WINDEKILDE, I. M. (2016).

The methods for adjudicating task and payment, though, may vary from platform to platform: some may launch competitions with more people working at the same time on the same task and the customer selecting and paying the best service. Some may work on a first-come-first-served basis. In others, platforms have just the role of intermediator and do not interfere in setting modalities and prices. Nonetheless, almost every Gig company intervenes in setting minimum quality standards and minimum compensation for certain tasks (De Stefano, 2016).

#### 2.3. On-demand platforms

The most famous example of Gig Platform is Uber, a US-based online transportation platform company founded in 2009 and operating worldwide with more than 300,000 active drivers and 1.8 million users (Uber, 2017). It clearly belongs to the category of "work on-demand via apps" and it claims to be a simple marketplace where drivers as independent agents meet customers. Beside it, many other platforms operate with different value proposition but the same foundation, namely the one of simply matching workforce with clients locally. Some renowned examples are Lyft, the main competitor of Uber, it also offers transportation services on a ride basis; Handy, TaskRabbit or

Care.com, which provide a different kind of home services per task; Angie's List, which gives customers the possibility to choose across thousands of diverse gigs.

While work on-demand via apps platforms are inherently more directed to individuals and private customers, crowd work marketplaces are instead targeted at organizations. The general aim of these platforms, in fact, is to match actors for activities usually needed by firms that are then performed virtually – e.g. completing surveys, transcribing interviews, filling forms, creating logos, giving basic consultancy services -.

Given the scope of this work and the number of existing marketplaces, the author decided to focus the attention on the research only on crowd work platforms; in order to provide the reader with the key features of the soon-to-be-analyzed platforms, it follows a short description of two companies - Amazon Mechanical Turk and Upwork – and a comparison of their characteristics.

#### 2.3.1. Amazon Mechanical Turk

Amazon Mechanical Turk (AMT) is a crowdsourcing Internet marketplace introduced by Amazon in 2005. It enables individuals and businesses to coordinate the use of human intelligence to perform micro-tasks that computers are currently unable to do. "Amazon Mechanical Turk is based on the idea that there are still many things that human beings can do much more effectively than computers, such as identifying objects in a photo or video, performing data de-duplication, transcribing audio recordings, or researching data details" (Amazon Mechanical Turk, 2017).

In the marketplace, employers are known as "Requesters" post activities called "HITs", an acronym of "Human Intelligence Tasks". Every HIT is actually a group of activities, with a number varying from a single task to thousands of identical tasks to perform. The HITs are then picked up by online users, referred to "workers", who complete them in exchange for a small payment, typically a few cents per single HIT task. A screenshot of the platform is depicted in Figure 6 below.

FIGURE 6 - A SCREENSHOT OF AMT

Discover, preview and complete HITs on the new Worker website. Try it out Today1							
amazonmechanical turk	You	Account HITs	Qualifications	339,301 HITs available now			<u>Sign In</u>
	All HITS	HITS Available To You	IT's Assigned To You				
Find HITS <b>v</b> containing			that pay at least \$	0.00 🔲 require Mast		(in the second s	
Complete Profile Tasks to qualify for more HITs							$\times$
Click here to add or update your profile information. By providing this information, you r	may qualify for HITs from Re	equesters looking for Workers	like you.				
All MTTe							
1-100 of 724 Populte							
Fact hur HIT creation Date (newest first) V							
Sort by: [Hit Creation Date (newes: Inst) +	Show all details   Hide all	details				1 <u>2 3 4 5</u> / <u>Next</u> // <u>Last</u>	Items per Page: 100 V
Mark the purchase lines on a receipt							View a HIT in this group
Requester: RecProServices	HIT Expiration Date:	Aug 7, 2017 (3 hours 59 m	inutes)	Reward:	\$0.05		
	Time Allotted:	60 minutes					
Mark the purchase lines on a receipt							View a HIT in this group
Requester: RecProServices	HIT Expiration Date:	Aug 7, 2017 (3 hours 59 m	inutes)	Reward:	\$0.15		
	Time Allotted:	60 minutes					
Mark the purchase lines on a receipt							View a HIT in this group
Requester: RecProServices	HIT Expiration Date:	Aug 7, 2017 (3 hours 59 m	iinutes)	Reward:	\$0.10		
	Time Allotted:	60 minutes					
Combined Formulation and any alternative attractions							
Designation Astro Collisition	HIT Expiration Date:	Aug 7, 2017, (1 hour 50 m)	nutos)	Bourards	¢0.25		view a Htt in this group
requester: whon convicer	Time Allested	Aug 7, 2017 (1 hour 59 mi	nuces	Reward:	\$0.25		
	Time Anotted:	ou minutes					
Review, edit, and score the transcription of up to 35 seconds of media - Farn up to \$0.14 per HT1 in this group							
Requester: Crowdsurf Support	HIT Expiration Date:	Aug 6, 2018 (51 weeks 6 c	lavs)	Reward:	\$0.02		
	Time Allotted:	15 minutes					

Source: Amazon Mechanical Turk (2017).

#### 2.3.2. Upwork

Upwork, formerly Elance-oDesk, is a global crowd working platform launched in 2013 as a merge between the companies Elance and O-Desk. It enables businesses and independent professionals to connect and collaborate remotely in a wide range of services in Web, Mobile and Software development, IT & Networking, Data science & Analytics, Engineering and Architecture, Design and creative, Writing, Translation, Accounting and Consulting, Sales and Marketing, Customer Service, Legal and Admin Support.

In the marketplace, hirers post jobs – from microtask to complex projects –. The jobs are picked up by workers, called Freelancers, who complete them in exchange of a payment that can be fixed or hourly, according to employer's choice/freelancer proposal.

Beyond the base service offered for free to any professional/individual, Upwork offers:

- Upwork Pro, with "personalized assistance to help to find premium, pre-vetted talent" (Upwork, 2017).
- Upwork Enterprise, "An end-to-end technology and service solution customized to fit every company" (*Ibid*.).



#### A screenshot of the platform is depicted in Figure 7 below.

#### FIGURE 7 - A SCREENSHOT OF UPWORK

Search for Jobs		~ 9	Hiters
131,499 jobs found		s	Sort: Client Spendi View: 📃
Python Developer			
Hourly - Intermediate (\$\$) - Est. Tim	ne: 3 to 6 months, 30+ hrs/week - Posi	ed 2 months ago	
We are looking for an experience Requirements Skills: - Python/Fla comfortable in more	d Python developer who will work ask/Celery - scipy/numpy, scikit-lea	on the development of a machine learn n - REST API - parallel data processing	ning service. g - feels
Proposals: 20 to 50			
	varified +++++ \$40M+ spont	United States	
Client: 👖 Enterprise 🛛 🤣 Payment	vernied sease \$40MH spent V		
Client: 👖 Enterprise 🥥 Payment Global Sourcing Lead	verned ***** 340MT spent V		
Client: Denterprise Payment	ne: 3 to 6 months, 30+ hrs/week - Posl	ed 3 months ago	
Client: Enterprise Payment Global Sourcing Lead Hourly - Intermediate (\$\$) - Est. Tim Upwork Enterprise is looking to fi following a successful trial. The se evalu more	ne: 3 to 6 months, 30+ hrs/week - Posl ill in the role of Sourcing Lead. This elected candidate will have to work	ed 3 months ago would be a full time engagement - 40 towards achieving hiring objectives by	) hours/week - y sourcing and
Client: Enterprise Payment Global Sourcing Lead Hourly - Intermediate (\$\$) - Est. Tim Upwork Enterprise is looking to fi following a successful trial. The se evalu more Proposals: 20 to 50	ne: 3 to 6 months, 30+ hrs/week - Post ill in the role of Sourcing Lead. This elected candidate will have to work	ed 3 months ago would be a full time engagement - 40 towards achieving hiring objectives b	) hours/week - y sourcing and

#### 2.3.3. A comparison of the two platforms

In order to proceed with the analysis, it is useful to compare the two platforms in terms of key characteristics and services. The framework that will be used is taken from D. Vakharia (2015) and inspired by Kittur et al. (2013).

According to them, 11 criteria should be taken into consideration when assessing an Ondemand platform:

- 1. Distinguishing features platform features e.g. countries of operations, services
- 2. Whose crowd workforce source e.g. private pool or autonomous workers
- *3. Demographics and workers' identities* degree of worker personal information disclosed in the platform

- 4. Qualification & reputation e.g. mechanisms of assessing workers, tracking systems
- 5. Task assignment and recommendations e.g. provided support, "best fit" mechanisms
- *6. Hierarchy and collaboration* e.g. how workers are coordinated, how different organizational modes are foreseen for different tasks
- *7. Incentive mechanisms* which incentive mechanisms are offered to guarantee participation and effective work performance e.g. intrinsic or extrinsic rewards
- 8. Quality assurance and control how quality is ensured and assessed
- *9. Self-service, enterprise and API offerings* the characteristics of the service offered e.g. direct post by Requester, enterprise/premium subscription
- *10. Specialized and complex task support* e.g. presence of specialized services in the value offering, the extent to which platforms support parties in tasks
- *11. Ethics and sustainability* degree of promotion of ethical and sustainable context e.g. workers' protection

The comparison between the two companies is provided in the following Table (Table 1).



#### TABLE 1 - AMT AND UPWORK IN COMPARISON

Criteria	Amazon Mechanical Turk	Upwork
Distinguishing features	Basic and micro tasks Payment set by the requester, usually in pieces of work No information on workers available	Support for complex tasks Flexible payment model and monitoring of work-in- progress Public worker profiler qualifications, feedback and work histories Dedicated service to companies with Upwork Enterprise
Whose crowd	Own and autonomous workforce that sign in the platform	Own and autonomous workforce that sign in the platform Possibility to "bring your own contractor"
Demographics and workers' identities	Mainly US and India; lack of identified and demographic filtering No profile pages with information of workers' identity	Global workforce and diversified profiles; Public profile verified and showing name, picture, location, skills, education, past jobs, tests, rates, feedbacks and ratings
Qualifications & Reputation	Qualification test designed by the requester; lack of "approval" Reputation difficult to assess Lack of differentiation based on ability or competence	Support by chat and virtual interviews Work histories, past client feedback, test scores assess workers' reputation and credibility
Task Assignment & Recommendations	Search made through keywords, payment rate, duration No algorithms that matches skills or interest	Public posts and/or private invite Algorithm that matches skills, profile, interests and positions
Hierarchy & Collaboration	No collaboration tools Online forum where info are exchanged and workers cooperate informally	Rich communication and info exchange supported by well-made infrastructure Possibility to hire a team of freelances and technical means to manage it
Incentive Mechanisms	Requester can specify piecemeal payment and bonuses Little guidance in pricing tasks Monetary incentive only	Workers with higher ratings are typically paid more. A wide variety of payment methods are supported. Workers are charged 10% of the total amount charged to the client. With hourly pay, Requesters pay only for the hours recorded in the Work diary. Monetary incentive only
Quality Assurance & Control	Quality Assurance & control at a minimum level and randomly made	Work diaries with specifics on computers, screenshot, metadata, webcam pictures. In Enterprise solutions, QA trough testing, certifications and training
Self-service, Enterprise and API offerings	Support of self-service and enterprise solutions with API	Support of self-service and enterprise solutions with API RESTful API supporting customized features
Specialized & Complex Task Support	High degree of personalization and lack of support	Complex tasks supported in the process through guidelines. In enterprises solutions, support in every task.
Ethics and Sustainability	Ethical concerns deriving from the lack of support/framework in pricing	In UK and Canada benefits for workers (more than 30h/week) In other countries, non-definable

Source: Own-creation; Inspired by Vakharia (2015).



## 2.4. The organizational point of view

Nowadays, firms must find and retain the right experts and the right skills in order to compete and react in a continuously evolving business environment. However, these new and required skills are not often easy to find, and firms struggle to fulfill their need inhouse (Forrester Consulting, 2017).

The rise of platforms matching work demand and supply at an extremely high speed has allowed minimizing transaction costs and market frictions. The flexibility and the efficiency typical of these marketplaces make possible to traditional companies to access to vast pools of people, with different capabilities and for diverse tasks in anytime and anyplace.

Obviously, there is nothing new in outsourcing personnel. Human Resource Outsourcing (HRO) practices – "organizing arrangement that emerges when firms rely on intermediate markets" e.g. staffing and recruitment agencies "to provide specialized capabilities that supplement existing capabilities deployed along a firm's value chain" (Holcomb T. & Hitt M., 2007) – have always been common habits for firms. Though, the recourse to On-Demand platforms differs from the traditional outsourcing by the mean used to outsource i.e. agencies vs on-demand online platforms. If staffing or traditional freelance agencies used to serve as the intermediate between demand and supply, in the Gig Economy circumstances the platform provider is only the infrastructure that allows the matching.

To date, the majority of buyers of on-demand services have been individuals or small companies in need of one-time project and limited in-house resources. Though the traditional work model is changing heavily and companies are starting to realize that it is now possible to get activities previously economically infeasible; rather than changing the way the activities are performed internally, firms are improving them by enlarging the tasks to be done on-demand. Work, traditionally been "hub-based", is getting shifted outside the company, regardless of location (Frei, 2009).

If now it is premature to talk about it, potentially, an extensive use of Gig services may redefine the boundaries of firms, challenge their modes of operations and change priorities of businesses. By outsourcing personnel on-demand for disparate activities and at many levels of the organization, enterprises could benefit on different grounds, overcoming the limits that traditional outsourcing has always faced.

First, the vast pool of individuals with diversified background allows a better matching between required characteristics and individuals 'attitudes, improving theoretically the quality of the tasks performed.

Companies can now find specialized labor (e.g. highly skilled, creative...), problem solutions and continuous stimuli; just for the rule of the big numbers, for any given business challenge, there may be people available to address it (Manyika et al., 2015; Donovan et al., 2016; De Stefano, 2016).

More than being a matter of skills, On-demand services allows workforce to be flexible, with firms able to solve geographical challenges e.g. shortages of experts in a specific area. In long-term, it will result to be an opportunity for income and social mobility in those regions where economy is underdeveloped or stable (*lbid*.).

The enhance in quality, though, will be unlocked once platforms will be able to overcome a series of issues. First, the extremely low piecework payments many platforms are offering right now (e.g. Amazon Mechanical Turk) is an invitation for gaming behavior which can negatively influence quality (Kittur et al., 2013).

Even the inadequacy of platforms infrastructures impacts quality; a classic example is AMT, where the lack of workers' profile generates an adverse selection problem i.e. the market of lemons: in lack of information on workers, Requesters are not able to evaluate beforehand the quality of the service they are buying; in this circumstance, the price they will offer will be proportional to the average quality of the workforce. The "good" worker, at this point, would leave the market not to receive a lower payment in regards to its quality. This leads the Requester to decrease the price even more, considering the pool of the AMT workers all as "bad" workers and reducing the quality of the performed task (Thierer et al., 2015).

Partially, the presence of feedbacks and ratings in many platforms reduces the need for control and the associated expenses. Freelances, feared by the reputational damage of a bad rating, are inherently incentivized to work carefully, making companies' intervention



unnecessary. Therefore, the risk and the responsibilities of tasks are shifted to independent workers, so that enterprises can capitalize more on certain activities. Quality is partially saved, although these mechanisms are not enough to overcome totally the Market of Lemons issue (*Ibid.*).

Moreover, from a company perspective, the use of freelancer rather than employees, reduces the costs associated with employment contracts; being the individuals considered as "independent contractors", in fact, they are not entitled to the advantages of a long-term work relationship – e.g. social security or pension contributions -. Similarly, the standardized terms and conditions settled by platforms providers limit the costs that companies must bear for negotiating and contracting (Aloisi, 2015). Compared to traditional outsourcing, the cost that companies support with Gig Services for each task is likely to be around 60/70% lower than before (Frei, 2009).

Again, savings may compromise quality: given the low prices of microtasks, companies may replace skilled workers with unskilled labor by decomposing an activity into small and different tasks. This degeneration, potentially dangerous for some companies, is seen by Kittur et al. (2013) as a new form of Taylorism, where "organizations optimize cognitive efficiency at the expense of education and skill development. Taylorism yielded to more enlightened job design after several decades (and protracted struggles by workers), but given the short time commitment between crowd worker and Requester, it is easy to imagine heightened exploitation and dehumanization."

The sum of these advantages may trigger a virtuous circle for traditional firms that, in average, could increase output by up to 9% and reduce costs related to talent and human resources by as much as 7%. By 2025, the world could benefit 275 bps average improvement in company profit margins (Manyika et at., 2015).

Capturing this potential will require effort and time. According to Frei (2009), five obstacles will determine the evolution of the phenomenon:

*Crowd Responsiveness* – the balance of enough workers and tasks to be performed must be reached at first. Enough Requesters to incent workers to sign into the service is dependent on finding enough workers to make the provider motivated to post the task on the platform. Up to know, platforms spent millions of dollars to reach the balance ensuring to succeed since the competition was still not so pressured. Now that the phenomenon is getting ahead, new platforms arise, and finding rapidly and cheaply the balance between workers and tasks available will be a key success factor.

- *Ease of use* The range of potentially performable tasks and the impossibility to standardize workflow and processes, may create confusion and challenges in getting the expected results. Although on-demand platforms are trying to support both parties as much as they can (e.g. Upwork standard description of some jobs, 24/7 chat with support), there is still a huge room for misalignment, variability and results' uncertainty. A well-working on-demand service, in the future, will be the one that supports the parties in the entire process of creating the description, setting expectations, performing the tasks and verifying results.
- Satisfactory results the above-described quality issues have been the main reasons why companies decided to abandon on-demand services. According to Frei (2009), people are willing to give a try to Gig platforms – investing time and effort – but unwilling to give a second chance if results were below expectations. Since it may be impossible for highly diversified platforms to check and proof all the workers' output and efforts, it is likely that in the future companies will offer a targeted and narrow service to succeed.
- *Cost Advantage* finding the right balance between low costs for companies and decent payments to workers will be crucial. In the current scenario, where legislation is still unclear and workers' protection not defined, prices set for tasks in many platforms seems to be irrational and unsustainable. Platforms will need to capitalize on ancillary services rather than primary.
- Security and Privacy protection of sensitive data is a key issue today. Companies are reticent to disclose financial information or company data given the fear that something could be traced back or discovered. Financially, the problem has been partially removed with sophisticated methods of payment e.g. Paypal. Operatively, the unwillingness to share some data may compromise the quality of tasks.



*Resistance of the inefficient market* - even if it is an external barrier not directly linked to On-demand services, the resistance that industries, lobbies, and media are driving forward is slowing down the development of the phenomenon. Especially in some geographical areas, the spread of platforms has been interpreted as an obstacle to the social being rather than a boost in the productivity. Even if the hurdle is not attributable to On-Demand Platforms, they are the one in charge of educating, train and shows the world the potentialities this disruption will have in the future (*Ibid*.).

In different ways but scholars (Aloisi, 2015; Frei, 2009; Manyika et at., 2015; Kittur et al., 2013) agree on the fact that updated labor market regulations, better infrastructure, clearer data ownership, privacy rules, training and education of the players involved, will all contribute to developing a new business model in the future. Since the evolution is still at dawn, a conceptualization of how, when and why companies should recur to ondemand services is fundamental. In the light of this, this work will proceed in setting the methodology to analyze data and answers to the two research questions.



# 3. Methodology

The aim of this Chapter is to provide the methods and approaches applied to answer the proposed research questions. Being the guideline of the thesis, the author will provide the research purpose, philosophy and strategy, as well as she will describe the research design and process.

## 3.1. Research purpose

The primary aim of this thesis is to evaluate how Gig Economy affects and will affect the current firms' boundaries and practices. Guided by the RQ1 - *To what extent the Transaction Cost Economics' dimensions of uncertainty, frequency, and asset specificity can be useful to explain the "make or buy" dilemma in the Gig Economy scenario?* - and RQ2 - *How will firms' boundaries and practices be shaped to make competition sustainable in the future?* – the author aims to identify, testify and contextualize the factors that influence firms' choice to recur or not to On-Demand services.

Companies' choice to recur or not to Gig platforms is attributable to a "make or buy" decision; since Transaction Cost Economics is a useful milestone in tracing the drivers of the "make or buy", it represents the main theoretical foundation used in the thesis. Though, given the complexity and the multidimensionality of the topic, the work will refer to other relevant theories, chosen with the objective of better understanding the context or the findings. The theoretical frameworks will be explained throughout the text to create a direct link between the explanation and the application.

The ultimate goal of this work is to contribute to the young field of Gig Economy. Through combining approaches and sources, the author will develop a cohesive knowledge potentially usable as a basis for future research. The primary target is, therefore, academia, even though key findings may be useful for companies or community in general as a basis for outsourcing and decision-making.

## 3.2. Research philosophy

The research philosophy is aimed to explain the nature of knowledge, how it is perceived and developed and how data are gathered, analysed and used (Dalal & Priya, 2016). The choice of the philosophical approach determines the assumptions to set and perspective to use and it helps to clarify the research approach and design. Since the scope of this thesis is to produce new knowledge, it becomes even more crucial to discuss the philosophical choice.

The position that this thesis adopts is *Pragmatism*, the perspective that "recognise that there are many different ways of interpreting the world and undertaking research, that no single point of view can ever give the entire picture and that there may be multiple realities" (Johnson& Onwuegbuzie, 2004).

Choosing one position, indeed, would have resulted somewhat unrealistic for the scope of work. With a positivistic approach – "atomistic, ontological view of the world as comprising discrete, observable elements and events that interact in an observable, determined and regular manner" (Collins, 2010) – it would have been impossible to be purely objective and independent, since the knowledge on the Gig Economy phenomenon is still unstructured, casual and not statistically measurable. On the opposite, Interpretivism – the view suggesting that "access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments" (Myers, 2008)– would have restricted the contribution of the work in the way that the phenomenon would have only been analyzed with the filter of the author.

Given the value-driven approach of this thesis, the choice of Pragmatism is dictated by the necessity to give a practical meaning to the phenomenon, still being embedded in a specific context.

The complexity and novelty of the topic and the lack of structure in existing scholarship suggest that it is necessary to combine both positivist and interpretivism positions within the scope of the research. Only in this way, it is possible to integrate more than one research approach and strategy to go deep into the social conditions, structure, and relationships that characterize the relationships between companies and Gig platforms.

## 3.3. Research approach

The approach that this work adopts is Abduction.

Traditionally, two approaches have been mainly used when conducting researches. The first, deduction, is considered a top-down approach and it usually refers to the use existing theory to build hypothesis and test them. The second, induction, is a bottom-up approach where from data and facts, new theories are shaped. Though, instead of moving from theory to data (as in deduction) or data to theory (as in induction), an abductive approach moves back and forth, in effect combining deduction and induction (Saunders, 2009). "Not only is it perfectly possible to combine deduction and induction in the same piece of research, but also in our experience it is often advantageous to do so" *(ibid.).* 

The choice of using Abduction is in line with the Pragmatic philosophical choice. According to Saunders (2011), the abductive approach:

- Allows to take more informed decision about research design.
- Helps to address and Figure out the strategies and methodologies in accordance to the research questions.
- Enables to adapt the research design to cater for constraints e.g. limited access to data or lack of prior knowledge of the subject (Sauders, 2011; Easterby-Smith et al., 2012).

The aim of this thesis is to evaluate how Gig Economy affects and will affect the current firms' boundaries and practices; since the phenomenon is dynamic, still undefined and underestimated, combining several sources of evidence and data sources and shifting between analysis and interpretation enables new knowledge and perspectives to emerge.

## 3.4. Research design

Once set the research philosophy and approach of the work, the research design represents the general orientation of how the research questions will be answered. In particular, the author will set the objectives, the sources of collection of data, the constraint and the limitations.

This work as an explanatory purpose. The goal of "finding out what is happening, seek new insight and to assess phenomena in a new light" (Saunders, 2009) is contextualized to Gig Economy, and to how the rise of these new platforms is changing the traditional boundaries and decisions of firms.

Relevant and potentially useful topic, it presents one major limitation: the complexity to assess the phenomenon, its trend, and boundaries. On one hand, academia has been discussing marginally the phenomenon, making unrealistic the chance to do a theoretical review. On the other, the novelty and the shortage of accessible data on current platforms makes difficult to assess it from a pure quantitative and inductive perspective.

In the light of these factors, a pragmatic philosophy of science and an abductive approach have been chosen, and a mixed method approach has been used.

The mixed method approach is a research inquiry that employs both qualitative and quantitative data collection techniques and procedures in a research work. The purposes of this choice are two: providing better opportunities to answer to research questions; to better evaluating the extent to which the findings can be trusted and relevant (Tashakkori & Teddlie, 2003).

This approach presents two major advantages:

- Different methods can be used for different purposes in the study e.g. aid interpretation, facilitation of research, studying different or complementary aspects.
- It gives confidence that the most important issues are addressed (Saunders et al., 2009).

Finally, this work is a cross-sectional study. Given the intrinsic time constraint of the Master Thesis, the research on the relationship between Gig Economy and traditional companies has been made between May 2017 and August 2017 and has to be referred to this particular period of time.



## 3.5. Research methods

In accordance with the mixed methods approach, many sources and data have been collected and used. Given the frequently mentioned limitation derived from novelty and de-structure of the topic, the gathering phase of data has been initially and apparently random; after a process of trial-error, the research process has been transformed into a systematic and organic model. In order to better get the ratios of using many methods and before describing them in details, it is useful for the reader to understand the process that the author adopted to systematize the process:

- Primary research on existing literature on Gig Economy and its consequences in long-term.
- 2) Identification and extrapolation of theory supporting the first research question
   → Definition of RQ1: To what extent the Transaction Cost Economics' dimensions of uncertainty, frequency, and asset specificity can be useful to explain the "make or buy" dilemma in the Gig Economy scenario?
- 3) Deduction and definition of Propositions to verify.
- 4) Gathering and analysis of primary and secondary data supporting hypothesis → are the Propositions confirmed or rejected?
- 5) Outcome assessment → Definition of RQ2: *How will firms' boundaries and practices be shaped to make competition sustainable in the future?*
- 6) Research of surrounding literature and gathering of additional data to discuss and generalize findings.

The above-described process is graphically represented on the next page (Figure 8). In accordance with the definition of mixed-method approach, the research methods used are multiple; the author clusters them in two macro paragraphs and illustrates them in the next pages:

- Literature and Theoretical review
- Data collection (analysis).





SOURCE: OWN-CREATION

#### 3.5.1. Literature and Theoretical review

When the author speaks about Literature and Theoretical review, it refers to the collection of scholarly writing on the topic – including peer-reviewed articles, books, dissertations and conference papers.

This thesis recurs to theoretical or literature review in three different moments of the process, namely:

#### (1) To give the overview, the context and the framework of the work

In Chapter 2, Background, the author traces the evolution of Gig Economy by borrowing the different perspectives scholars have on the topic. The focus of the literature review is to understand the development of the phenomenon in relation to traditional companies; it is not an exhaustive review, rather it represents a way to understand the Gig economy context, drivers, impacts, and relevance in the current economic scenario.

The research is mainly conducted through brief academic papers and company report, searched through standard search engines or databases e.g. Google, CBS library's databases. Articles have been selected based on relevance for the study; though, being a novel topic, the number of available references is limited.

#### (2) To build the Propositions that set the ground for the research

In Chapter 4, the author makes use of Transaction Cost Economics theory as the main reference point to build Propositions. Even if this work lacks a written systematic review of the evolution of this theory, many references to the theory are made throughout the research. This choice is driven by the author willingness to link explanations of concepts to their use, in order to avoid confusion and make the reading more coherent.

The sources used in this contents are the studies, articles, and researches developed by Ronald Coase (1937) and Oliver Williamson (1975), the very own authors of the theory.

#### (3) To discuss the findings and compare and develop new knowledge

In Chapter 5, the use of literature and theories is meant to organize, systematize and generalize the findings. Through a continuous interrelation between literature and findings, the author aims to develop new knowledge.



It is difficult to limit and define the characteristics of the literature used. If necessary, every time the author will refer to a peer-reviewed articles, books, dissertations or conference papers, she will explain the contribution and the potential limitation it will have. As a general rule, the references have been searched through CBS databases and Google Scholars and selected based on the relevance of the topic and of the published date.

#### 3.5.2. Data collection

In contrast to the theoretical and literature reviews where the author uses secondary data, many primary data have been collected in order to answer the two research questions.

As part of the mixed method approach, many forms of data have been gathered. The choice of methodologies followed the practical necessities of the research: in accordance with the pragmatic approach, every time the author felt that an aspect of the topic was not fully covered, she collected and integrated new sources of data to increase the relevance of the study.

Data have been collected in Amazon Mechanical Turk and Upwork. The aim was the one of observing how much companies make use of On-Demand Platforms, in which circumstances, and for what. Hence, for a specific and limited span of time of 10 days - from July, 30th to August, 8th 2017 - the author recorded the usage and the content of the tasks posted by companies in the two marketplaces.

The selection of this exact two websites is not fortuitous: if Amazon Mechanical Turk is focused on menial tasks, Upwork covers a vast range of services, in diverse industries and with different degree of intellectual contribution. By choosing platforms with different positioning in the same market segment, the author has the possibility to get more insights on firms' behaviours and practices.

On the opposite side, this choice presents a major limitation: the diversity of the two platforms in terms of customers, operating principle, average usage, and procedures,
reduces the degree of comparability of the extracted data and therefore the relevance of this research.

#### (1) Amazon Mechanical Turk

With the use of an automatic script, every day, in the time slot between 1 PM and 3 PM, the author downloaded all the HITs posted and at that time available on the platform and stored them into an xls file. The script has been developed appositely for this research and can be run at http://dev.stalk-it.com/gethits.aspx.

Once downloaded, the posts were elaborated and re-structured by title, Requester, reward, time allocated, qualifications and keywords. The Input data are available in Appendix 1: AMT\_input.

At the end of the data gathering phase, the author collected 7716 HITs groups belonging to 1111 Requesters. These numbers take into consideration the redundancy of the posted HITs but they don't account for HITs that were posted and canceled. Nevertheless, they should be good approximations of the activity of the marketplace.

From that moment, the data analysis phase started, with processes and results that will be described in the following Chapter. The tasks have been elaborated, studied and clustered into subcategories and for each Requester and keyword, the author tried to analyse the type of task associated, the frequency of use and the areas of interests. Individuals/companies that posted the most, have been contacted through email to gather more information about their recourse to Amazon Mechanical Turk.

Moreover, for each individual/company, the author checked through the website http://www.mturk-tracker.com - granted by Panagiotis G. Iperiotis<sup>1</sup> - how many posts the Requester submitted in the entire history of AMT.

#### (2) Upwork

The data gathering process of Upwork has been conducted with different methodologies but in the same period as AMT – every day from July, 30th to August, 8tht 2017 in the time slot between 1 PM and 3 PM -.

<sup>&</sup>lt;sup>1</sup> Panagiotis G. Ipeirotis is an Associate Professor at the Department of Information, Operations, and Management Sciences at Leonard N. Stern School of Business of New York University. Passionate on crowd work, he developed MTurk Tracker, a website that tracks the traffic and usage of Amazon Mechanical Turk. In 2014, many functionalities of the tool have been blocked by Amazon itself. Right now, it is only possible to search data through the keywords.



The platform configuration allows personalizing researches using filters - as Job Type, Experience Level, Client History, Client Info, Number of Proposals, Budget, Hours per Week, Project Lengths, Category and Client Location – and sorting criteria of Relevance, Newest, Client Spending and Client Rating. Given these tools, visible in Figure 9 below, data have been observed and clustered online and inputted in an xls file, without the need of scrapping and downloading the entire usage of the platforms in the referred period.

Search for Jobs		~ <b>२</b>	البع با¢ Filters
129,398 jobs found		Sort:	Newest View:
Any Job Type Hourly (64,018) Fixed Price (65,380)	EXPERIENCE LEVEL         Any Experience Level         Entry Level - \$ (34,431)         Intermediate - \$\$ (61,037)         Expert - \$\$\$ (33,812)	CLIENT HISTORY           Any Client History           No Hires (40,801)           1 to 9 Hires (37,695)           10+ Hires (50,902)	CLIENT INFO Payment Verified (92,431
<ul> <li>Any Number of Proposals</li> <li>Less than 5 (28,344)</li> <li>5 to 10 (29,437)</li> <li>10 to 15 (20,674)</li> <li>15 to 20 (13,733)</li> <li>20 to 50 (28,173)</li> </ul>	BUDGET  Any Budget  Less than \$100 (28,007)  \$100 - \$500 (21,857) \$500 - \$1k (6,167) \$1k - \$5k (7,071) \$5k+ (2,277)  \$Min \$Max	HOURS PER WEEK Any Hours per Week Less than 30 hrs/week (50,522) More than 30 hrs/week (13,496)	<ul> <li>PROJECT LENGTH</li> <li>Any Project Length</li> <li>Less than 1 week (14,229)</li> <li>Less than 1 month (10,76)</li> <li>1 to 3 months (11,330)</li> <li>More than 3 months (27,696)</li> </ul>
CATEGORY	CLIENT LOCATION		

SOURCE: UPWORK (2017).

Two main differences compared to AMT:

The operating principle of Upwork differs from AMT in the way that it is not possible to know the identity of the Requester unless you are hired for performing the task. Though without referring to the name, the platform shows feedbacks and historical data about the client as shown in Figure 10.



#### FIGURE 10 – AN EXAMPLE OF CLIENT'S PROFILE AND FEEDBACK IN UPWORK



#### SOURCE: UPWORK (2017).

Even if it is not possible to know automatically the company's identity, the author analysed the tasks one by one in order to extrapolate from tasks' feedbacks and description, the features of the company requesting the service. In the 70% of the case, firms' names can be found, but given the amount of posts available in the platform, the author recovered 50 companies' name. Details will be explained in the following Chapter. Second, since in the period of measurements the platform registered an average of 129,385 tasks per day and more than 750 pages to show, it resulted impossible to observe and analyse all the task posted in the website. Therefore, in contrast to Amazon Mechanical Turk, the analysis of Upwork proceeded in an unstructured way, with the aim of getting that information about clients and their location that are not visible from AMT.

Finally, in order to gather insights on the ratios and motivations of companies using On-Demand services, qualitative and quantitative data have been extracted from case studies, reports and infographics that many on-demand companies made available.

### 3.6. Quality of research

Before moving to the analysis section of this research, it is essential to assess the credibility of the study and of the methodological process described in this Chapter. Per

Saunders et al. (2009), there are mainly two ways to evaluate the quality of research, namely considering the reliability (1) and validity (2).

### 3.6.1. Reliability

Defined by Saunders et al. (2009) as "the extent to which your data collection techniques or analysis procedures will yield consistent findings", reliability is necessary to demonstrate that the data collection methods the author performed may be replicated with the same results.

Given the nature of the research methods, the way to assess the reliability is to provide externals the documents and materials that would allow the process to be repeated. At this regard, the research methods sections provide the script and the exact procedure to extrapolate the data online, while in the xls files - Appendixes 1,2 and 3 - it is possible to find the raw data and materials the author used for the analysis.

### 3.6.2. Validity

Referring to "whether the findings are really about what they appear to be about" per Saunders et al. (2009), validity is concerned with the causality and relationship between variables.

One way to assess the validity of researches is to show that a range of evidence is illustrated through different data sources. Referred to construct validity (Yin, 2003), this is the case of this study: through data collection from two marketplaces (data extrapolation), literature and theoretical reviews, the author will test findings in many ways, enforcing and linking them.

The second way, internal validity, refers to the ability to show the causal relationships between the variables (*Ibid*.). Since the Propositions of this work have been generated through causal relationships by applying Transaction Cost Economics to the current state-of-art of Gig Economy, it would not be too exaggerated to say that this work is intrinsically and internally valid.



Finally, the third type of validity, referred external, is concerned with the degree of generalizability of the findings (*Ibid*.).

The objective data and methods used by the author follow the willingness to provide as many generalizable findings as possible. Though, the study has been made by choosing only two platforms across the thousands of realities currently operating and with many limitations that will be explained in the next paragraph. Since there are no existing studies that may test the validity of the findings, only further researches or observation of reality may evaluate the real generalizability of findings.

## 3.7. Limitations

Despite the effort of the author to make this work as much objective and external as possible, there are some issues that limit the relevance of the research.

The first demarcation is that making assumptions about the appropriateness of the theory – Transaction Cost Economics in these circumstances – will determine the conclusions that will be shaped.

Moreover, being a master thesis work, the shortage of time reduces the potentials of the analysis. In a proper period of time and with a full-time dedication to the work, the methodologies the author used would have brought fundamental insight and an enormous step ahead in the literature.

In this circumstance, it would have been useful to enlarge the analysis to many other ondemand platforms rather than limiting the research to Amazon Mechanical Turk and Upwork. In this way, the validity of the findings would have been fully verified and the research potential totally exploited.

Again, the so-called subject error (Saunders et al., 2009) should also be considered as a limitation: data have been gathered in 10 days in a specific period of the year; the collection of data in a different time of the year may have generated different results.



At this regard, an additional restriction should be taken into account. The possibility to use only non-sensible data and the different working principle of the two marketplaces – AMT and Upwork – led to different data scrapping processes as well as analysis steps. This lack of standardization and tools makes divergent the quality, the quantity and the type of data available, making difficult to compare and analyse the information in a proper way.

Nevertheless, since the spread of the phenomenon is slowly interesting all the cultures, the author assumes and generalizes the findings without focusing on a specific country or area. Though, there may be minor geographical or cultural differences that may compromise the effectiveness and the generalizability of the results.

Again, the observer bias is worth to be mentioned: different ways of interpreting realities from different readers may limit the relevance of the work to some extent.

Finally, the novelty of the topic, the de-structure of data, and the shortage of references led the author to recur to many and diversified methodologies. If on some ways, it is a strength for the scope of the research, on the other it represents a strong weakness: given the time constraint, the sample size for each method is too small to conduct statistical tests. As a consequence, the author of this paper may not have enough statistical power to support the research (Driscoll et al., 2007).

Given these limitations, the theoretical contribution of this thesis is not intended to serve as a fully specified theory for purposes of prediction and explanation. Rather, this work should be intended as an attempt at providing a foundation for further research in the field of Gig Economy and its impact in the Human Resource Management.

# 4. Analysis and Findings

In this Chapter, the author will proceed to analyze the data collected: following the description of the perspective used and the deduction of the Propositions from theory application, the author elaborates and interprets data. Hence, output is explained and findings elucidated.

# 4.1 Propositions formulation

### 4.1.1. Introducing Transaction Cost Economics Theory

At this point of the work, the relevance of the topic should be clear and the motivation of the author understood: Gig Platforms are disrupting traditional businesses by changing the ratio of value creation, redistributing economic surplus, revolutionizing work and work-life balance and rebalancing the power in the economic scenario. The author's focus on the firms' side of the phenomenon is consequent to the shortage of literature on this aspect, considered though crucial to the future development of theories on the Gig Economy field.

To have a cohesive knowledge of the topic, it is useful to determine when and how companies recur to Gig Economy platforms – i.e. when on-demand staff is substituted to traditional employees -. The "make or buy" dilemma has been traditionally decomposed and explained through Transaction Cost Economics Theory, the approach first presented by Ronald Coase (1937) and then formalized by Oliver Williamson (1975, 1979, 1983, 1985). Transaction cost occurs "when a good service is transferred across a technologically separable interface - they arise every time a product or service is being transferred from one stage to another, where new sets of technological capabilities are needed to make the product or service" (Williamson, 1985).

In the hypothesis of symmetric information, typical of classic economic theory, the transaction can be executed without incurring any costs. The real world is though

characterized by inefficient markets, where symmetric information is utopian and agents must search for information and monitor the process to ensure the contract fulfillment. All the costs related to these activities are defined Transaction Costs.

TCE explains the implications for industrial organizations of choosing a transaction over another namely why do firms exist, what explains firms' boundaries and what explains firms' internal organizations. Starting from the assumption that people conduct transactions in the most economical way, Coase (1937) shows why economic agents join up and create large organizations. Because of "the cost of using the price mechanism" – i.e. "the costs of discovering what the relevant prices are" and "costs of negotiating and concluding [contracts]" (*Ibid.*) - a firm exists since it reduces certain expenses for transactions which would require lengthy negotiations. Though, a firm is characterized by increasing marginal, hierarchical and influence costs that, together, prevent all the existing transactions to be organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organizing in another firm" (*Ibid.*).

Starting from these ideas, Williamson (1979) developed a framework to describe transactions and determine the organizational implications. Two behavioral assumptions should be first clarified: (1) human agents are bounded rational, namely they "experience limits in formulating and solving complex problems and processing information" (Simon, 1957; Williamson, 1979); (2) individuals are opportunistic i.e. not always trustworthy or honest in honoring contracts.

In the light of these assumptions, "the critical dimensions for describing transactions are (a) uncertainty, (b) the frequency with which transactions recur, (c) the degree to which durable, transaction-specific investments are required to realize least cost supply" (Williamson, 1979). These factors originate transactions costs and determine the firms' organizational form and boundaries.

TCE has been successfully applied in diverse fields. Well-known examples are: to forward vertical integration (John & Weitz, 1988), contract typology (Adler et al., 1998),



collaboration of buyer-seller relationship (Sriram, 1992), Sharing Economy (Henten & Windekilde, 2017) (Teo & Yu, 2005).

It is reasonable to assume that firms' choice of recurring to Gig workers or hiring employees is dictated by convenience and that they will choose the form that allows them to minimize transaction costs. This consideration makes TCE a viable option to answer RQ1, - *To what extent the Transaction Cost Economics' dimensions of uncertainty, frequency, and asset specificity can be useful to explain the "make or buy" dilemma in the Gig Economy scenario? -.* 

### 4.1.2. A transaction-based approach of Gig Economy

The rise of Gig Economy and the spread of on-demand platforms reduces the search, information, bargaining and enforcement costs that company would have sustained to find independent contractors in an offline scenario. The match between workforce and employers is now immediate and the resulting economic exchange more efficient; in TCE terms, the new platforms decrease the costs of using the price mechanisms with respect to the ones of organizing the transaction within the firm.

Following the Coaesian macroeconomic view, in long-term firms' boundaries should be shifted and the size of the firms reduced. To evaluate whether this is true, it is first useful to describe the transactions and the circumstances in which firms effectively choose On-Demand staff rather than employees. In order to do so, Williamson (1979) dimensions are considered: (1) uncertainty, (2) the frequency with which transactions recur, (3) asset specificity.

#### 1) Uncertainty

When referring to uncertainty, Williamson (1979) intends how the incompleteness of the contract and the bounded-rational/opportunistic attitude of agents may open the possibility of ex-post renegotiation and result in inefficiencies.

In the scenario of Gig Economy, the uncertainty is mainly derived from the lack of a unified legal discipline and regulation. The absence of a definition of gig worker; the dubious employment relationship between freelancers, the user firm and the platform;



the blurred terms and conditions of some marketplaces; the shortage of protections and social security in many countries; they all increase the likelihood of hold-up problems. When this legal uncertainty occurs, the recourse to On-Demand staff may increase the company's exposure to unforeseen circumstances, increasing transaction costs and disincentivizing both firms and individuals to make use of on-demand platforms.

**Proposition 1**: Uncertainty in the legal treatment of Gig contracts and players is negatively associated to the extent of use of On-Demand platforms. Hence, there is a negative relation between the degree of workers' protection in a platform and the participation of actors in the Gig Economy market.

#### 2) Frequency of transactions

The second critical dimension for describing transactions that Williamson (1979) suggested is the frequency with which transactions recur. Specialized governance structures are much easier to justify for recurrent transactions than for identical transactions that occur only occasionally.

In the perspective of the firm deciding whether to hire an employee or a freelancer, the recurrence of the activity to perform plays a big role; all others things being equal, the more recurrent the activity to perform, the less the firm should recur to On-Demand platforms and workers.

**Proposition 2:** The more frequently an activity is performed by a company, the less the firm will recur to Gig platforms.

#### 3) Asset specificity

Asset specificity is for Williamson the most important dimension for describing transactions, as well as the key characteristics that distinguishes TCE from prior studies of organizations. It refers to the specificity of the investment needed for a certain transaction namely "the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrificing productive value" (Williamson, 1979). The less the investment is specialized and marketable, the more the agent can turn it to an alternative source in unexpected circumstances. The more the asset is specific, the more



the parties are "locked into" a transaction. In other terms, asset specificity creates a bilateral dependence between the parties.

Across the different forms that Williamson defined, human asset specificity is the one residing in valuable knowledge for firm-specific tasks and that "arises from learning by doing" (Williamson, 1979). In the Gig Economy scenario, the choice of firms between employee and gig workers should be influenced by the specificity of the activity to perform. The more central is the activity for the value proposition of the firm, the more it contains valuable and critical knowledge; therefore, in the choice of outsourcing certain tasks to independent workers rather than integrating them into the firms, companies should consider to what extent the activity and the knowledge residing is specific.

**Proposition 3**: The centrality of the activity a firm must perform and the specificity of the knowledge contained in it affects negatively the likelihood the company will recur to On-Demand services and workers.

Figure 11 represents graphically the proposed relationship between TCE dimensions and the firms' willingness to use Gig Platforms.





Source: Own-source

The work will proceed in the next paragraph with an analysis of the data gathered from the two platforms – Amazon Mechanical Turk and Upwork –. The scope of the analysis



will be the one of gathering useful information to accept or reject the Propositions obtained with the application of theory to the phenomenon.

# 4.2. Analysis of data

### 4.2.1. Amazon Mechanical Turk: overview

In total, 7,716 HITs groups have been collected from AMT, with an average of 7,72 HITs and 299,291 tasks per day. Given that many posts are available on the platform for more than one day, only 4,823 HITs were unique values, corresponding to the 63% of the total collected data. In the referral period, the average number of tasks per HIT has been of 389, with a variance of 4,893 and a standard deviation of 21. With an average reward per HIT of \$2.3, the platform registered an estimated \$6,894,321 of total rewards in 10 days of activity. Tables 2 and 3 sum up the main indicators explaining the average usage of the platform Amazon Mechanical Turk; the Tables have been extracted from AMT\_Analysis.xls, created and elaborated by the author and available as Appendix 2.

	30-Jul	31-Jul	01-Aug	02-Aug	03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug
HITs groups (Total)	742	866	807	776	698	687	770	740	790	840
HITs tasks (Total)	289475	386980	376254	339382	325675	303536	262170	252973	231386	225083
Average tasks per HIT	390	447	466	437	467	442	340	342	293	268
Average reward	\$ 2.46	\$ 2.11	\$ 1.57	\$ 2.46	\$ 2.08	\$ 1.85	\$ 1.97	\$ 2.40	\$ 2.06	\$ 2.06
Estimated total reward *	\$ 711,328	\$ 816,260	\$ 589,068	\$ 836,090	\$ 678,645	\$ 561,803	\$ 517,452	\$ 607,176	\$ 475,797	\$ 463,023

TABLE 2 – MAIN INDICATORS OF DAILY USAGE OF A	MT
---	----

\*Approximate estimation. See Appendix 2 for details.



HITs groups with duplicates, total	7716
HITs groups no duplicates, total	4823
Number of Requesters, total	1111
Average HITs groups per day	771.6
Average HITs tasks per day	299291.4
Estimated number of tasks, total	2992914
Average tasks per HIT group *	389.2169893
Variance of HITs group by day	2965.24
Standard deviation ( $\sigma$ ) of HITs groups by day	54.4540173
Average reward per HIT task (no duplicates) *	\$ 2.30
Estimated total reward (total) *	\$ 6,894,320.56
Average total reward per day *	\$ 625,664.14
Variance of HITs tasks rewards	\$ 36.33
Standard deviation ( $\sigma$ ) of HITs tasks rewards	\$ 6.03
Number of keyword (total)	14746
Average keywords used per HIT group	3.06

#### TABLE 3 – MAIN INDICATOR OF USAGE OF AMT

\*Approximate estimation. See Appendix 2 for details.

Source: Own-source

In order to understand the circumstances to which companies recur to On-Demand platforms, it is first important to assess AMT to find which activities are common and for which services the marketplace is usually used. To do this, the author performed a keyword analysis of all HITs in the dataset. In total, 14,746 Keywords emerged from the analysis, corresponding to an average of 3.06 words per HIT.

Table 4 shows the Top50 Keywords; by observing the keywords and the correspondent posts (see Appendix 1: AMT\_input.xls), it is possible to deduce that the most popular services firms require in AMT are transcriptions, surveys filling, photos tagging and user testing. Beyond the use firms make of AMT, the presence of keywords like "study" or "experiment" and the correspondent HITs descriptions suggests that the platform is also used for academic or researches' purposes.

Keywords	Frequency	Keywords	Frequency
survey	1545	tag	97
Transcribe	767	usability	96
transcription	762	opinions	92
voicemail	659	quick	87
demographics	480	speech	82
SpeechInk	471	short	81
psychology	384	experiences	81
research	264	english	81
data collection	253	photo	80
review	203	images	79
video	178	data extraction	79
study	178	text	76
image	177	experiment	74
easy	174	website testing	70
fun	159	user testing	70
writing	146	record voice	69
audio	140	trymyui	69
Work Stress; Time Management	129	ux	69
opinion	124	sound	69
feedback	116	tagging	68
fast	107	Personality	67
language	106	brand	63
attitudes	105	picture	62
website	104	health	59
screencast	98	insurance	59

#### TABLE 4 – USAGE OF AMT BY FREQUENT KEYWORDS

SOURCE: OWN-SOURCE

The Top10 Keywords (Table 5 on the next page) – filtered out those keywords associated with same activities or posts - appears 4,911 times in the examined period, representing the 64% of the Total HITs. The average reward for the Top10 is \$2.96, with a standard deviation of \$3.84. At this regard, the keyword "Transcribe" appears to be the most rewarding task; this deceptive value reflects how, in most of the cases, the transcription HITs are posted as single tasks and not as a group of many tasks as it happens usually in AMT.

The Estimated total rewards of the Top10 Keyword are \$5,287,785, representing the 77% of the total rewards registered on the platform in the analyzed period. Detailed computation can be found in Appendix 2: AMT\_Analysis.

Top10 Keywords	Frequency	Frequency/Total HITs	Average reward	Estimated total rewards (period)**
survey	1545	20.02%	\$ 1.14	\$ 495,582.21
Transcribe*	767	9.94%	\$ 9.39	\$ 2,251,881.06
voicemail	659	8.54%	\$ 10.70	\$ 2,157,207.92
demographics	480	6.22%	\$ 1.21	\$ 168,920.17
psychology	384	4.98%	\$ 1.08	\$ 50,189.53
research	264	3.42%	\$ 3.30	\$ 71,849.46
data collection	253	3.28%	\$ 0.25	\$ 16,767.47
review	203	2.63%	\$ 0.86	\$ 23,781.16
video	178	2.31%	\$ 0.47	\$ 14,482.76
study	178	2.31%	\$ 1.19	\$ 37,123.52

#### TABLE 5 - TOP10 KEYWORDS IN AMT

\*The keywords "transcription" and "speechInk" have been eliminated from the Top10 list since they were always used as second and third keywords in the HITs containing also "Transcribe".

\*\*Approximate estimation. See Appendix 2 for details.

SOURCE: OWN-SOURCE

One more way to cluster and categorize data that can be useful to our scope of research is to find the Top Requesters, their frequency of posts and the type of tasks they require. Table 6 below shows the Top Requesters, based on the number of HITs posted in the period of data collection. It is visible that there are few active Requesters that post a significant number of tasks in the marketplace. The 50 represented, indeed, account only for the 4.5% of the total number of Requesters and their 2,322 total HITs represent the 48.2% of the Total HITs (no duplicates) gathered in the referral period.

Moreover, across the Top50 Requesters in the platform, only 14% are companies, while 62% are individuals, students, laboratories or researchers that use the platform for nonbusiness related purposes; the remaining 14% are unverified users, available on the platform but not traceable online.

#### TABLE 6 - TOP REQUESTERS IN AMT

Requester	Frequency	Requester	Frequency
Speechpad	666	Shopping	23
Amazon Requester Inc Newer Versions	135	lan Gutierrez	22
Sharon Glazer	129	Judy	22
Elizabeth Harvey	110	Monica Tomlinson	21
UserBob	87	Zidong	20
UX Research	69	dblab	19
Crowdsurf Support	53	Acme Data Collection	18
AdsForce	52	Kevin Dodds	17
Vivek Bhaskaran	52	Olli Rantula	17
Amazon Mechanical Turk Team	50	Ben Schenck	15
Yale Institute for Network Science	48	SEO BrainTrust	15
Ad Tagger	48	Noah	14
Bunny Inc.	46	Sharn	14
Speechfeedback	45	Ignite Media Solutions	13
str11223344	39	Jason Van Buiten	13
SurveyComet	39	RC.org Mechanical Turk	13
John Donahue	36	Shruti	13
Leela Velautham	36	StanfordPragLab	13
AudioKite	34	Martin Fredriksson	13
Memory Lab	31	Cognilab	12
Daniel Bogart	30	Data Buff	12
20bn	27	Derek Powell	12
Chris Callison-Burch	25	MONSE1	12
Foxtrot	25	Paul Han	12
Brian Clark	23	Ramprakash Srinivasan	12

SOURCE: OWN-SOURCE

Filtering out non-business related Requesters from Table 6 we obtain Table 7, showing the Top14 Companies in AMT based on Total Rewards of the HITs posted in the referral period. The total HITs from 30/08 to 08/08 are 1,221, accounting for the 25% of the overall activity in the market; the Estimated Cumulated Rewards of the Top14 Companies is, indeed, estimated to be \$81,409.14, only the 1.2% of the Estimated Total Rewards of all the HITs of the marketplace in the referral period.

On average, the Top14 companies spend \$1.12 per each task ( $\sigma^2$ =\$6.34;  $\sigma$ =\$2.53), with an estimated time allotted of 62 minutes. This value, though, is biased for two reasons: first, Speechpad, the major Requester by number of HITs, uses AMT for transcriptions, already mentioned to be activities posted as single tasks and not as groups. For this client, the Average Reward/Task is \$9.98, significantly higher than other companies. In order to



consider this factor correctly, the Total Rewards for Speechpad do not consider the number of tasks as it happens for all the other companies, but only the sum of the rewards per HITs group. Second, the Amazon Mechanical Turk team, managing the platform and meanwhile recurring to the marketplace for internal operations, appears to be 6<sup>th</sup> for the number of HITs posted but it doesn't allocate rewards for its HITs. Being the value of Average reward/task of the Requester equal to zero, it impacts greatly the Top14 Average reward per task.

Detailed computation can be found in Appendix 2: AMT\_Analysis.

Company	Country	Corporate website	HITs	% Top14	Historical HITs, total	Top Keywords	Avg Reward/task	Total Rewards*	Avg time/task (minutes)
UserBob	US	https://userbob.com/	87	7%	1000+	screencast - usability - user testing - website testing	\$ 1.12	\$ 32,585.25	52
SurveyComet	US	https://www.surveycomet.co m/	39	3%	459	Survey	\$ 1.39	\$ 19,460.85	29
Acme Data Collection	US	https://www.acmedata.net/	18	1%	1000+	Voice recording - Android - audio	\$ 1.79	\$ 9,730.42	63
Speechpad	US	https://www.speechpad.com/	666	55%	1000+	Transcription - Captioning - Review	\$ 9.98	\$ 5,788.17	162
20bn	Germany	https://www.twentybn.com/	27	2%	332	Video - Artificial Intelligence - caption	\$ 0.63	\$ 4,651.14	60
Crowdsurf	US	http://crowdsurfwork.com/	53	4%	1000+	Transcription - media - edit	\$ 0.12	\$ 2,167.94	213
Foxtrot	US	http://foxtrot.co/	25	2%	246	Grammatical error correction - proofreading	\$ 0.24	\$ 2,132.91	18
AudioKite	US	https://www.audiokite.com/	34	3%	408	Survey - music - listen	\$ 0.16	\$ 1,891.59	60
Amazon Requester Inc.	US	https://www.amazon.it/	145	12%	1000+	Amazon - Social Media - Data Collection	\$ 0.03	\$ 1,782.61	108
EZ Money	US	https://www.getezmoney.com /livesite/index.asp	9	1%	29	Download - Survey - data entry	\$ 0.18	\$ 618.86	21
Bunny Inc.	Colombia	https://bunnyinc.com/	46	4%	1000+	Audio sample quality assurance - Static - Background noise	\$ 0.02	\$ 358.08	9
Ignite Media Solutions	US	http://www.ignite-tek.com/	13	1%	36	Transcribe	\$ 0.05	\$ 210.18	10
Hyperion	Cyprus / Greece / Saudi Arabia / India / US	http://www.hyperionsystems. net/	9	1%	1000+	Spam - Filtering	\$ 0.04	\$ 31.14	5
Amazon Mechanical Turk Team	US	https://www.mturk.com	50	4%	1000+	Demographic - language - listening	\$ -	\$ -	60

TABLE 7 - TOP14 COMPANIES BY PERIOD SPENDING IN AMT

\*Approximate estimation. See Appendix 2 for details.



### 4.2.2. Upwork: overview

On average, 129,385 tasks have been registered in the period of July, 30 to August 08 2017, with a variance of 455,005 tasks and a standard deviation ( $\sigma$ ) of 675 tasks per day. The Web, Mobile, and Software development appears to be the most frequent category, with an average of 40,383 tasks per day representing the 31% of the Average total tasks per day. It is then followed by Design and creative, with an average of 22,698 corresponding to the 18% of the Average total tasks per day. Less frequent categories on Upwork are Customer Service and Legal both impacting the Average total tasks per day with less than 2%. On the other hand, IT & Networking and Web, Mobile and Software development appears to have the greatest variability by day, given their standard deviations of 141 and 137. A greater variability can be interpreted as a major turnover, suggesting the author that tasks in these two categories are the ones with a lower duration on average. Table 8 shows the data have been registered on in the platform in the referral period. The Table has been extracted from Upwork\_Analysis.xls, created and elaborated by the author, containing all the detailed computation of the Upwork data analysis and available as Appendix 3.

	30-Jul	31-Jul	01-Aug	02-Aug	03-Aug	04-Aug	05-Aug	06-Aug	07-Aug	08-Aug	AVERAGE
Web, Mobile and Software development	40163	40208	40268	40305	40375	40457	40423	40505	40539	40587	40383
Design and creative	22599	22614	22639	22664	22683	22700	22728	22739	22783	22827	22698
Sales and Marketing	16988	17058	17139	17167	17107	17121	17171	17193	17143	17187	17127
Writing	16574	16559	16535	16608	16601	16615	16659	16673	16677	16691	16619
Admin Support	9645	9681	9626	9736	9742	9830	9866	9912	9910	9975	9792
Translation	4847	4888	4922	4950	4971	4993	5035	5056	5094	5144	4990
IT & Networking	4532	4305	4354	4388	4448	4498	4264	4566	4661	4711	4473
Engineering and Architecture	4071	4082	4104	4130	4112	4162	4168	4189	4185	4179	4138
Data science & Analytics	3252	3283	3295	3304	3323	3339	3350	3359	3371	3388	3326
Accounting and Consulting	2331	2358	2385	2401	2419	2447	2486	2510	2561	2534	2443
Customer Service	1993	1972	1957	1894	1864	1799	1755	1737	1698	1698	1837
Legal	1469	1484	1516	1498	1581	1619	1693	1606	1578	1543	1559
TOTAL	128464	128492	128740	129045	129226	129580	129598	130045	130200	130464	129385

 TABLE 8 - DAILY USAGE OF UPWORK BY TASK CATEGORIES

Table 9, instead, gather the data observed and registered in the referral period using Clients' countries as criteria.

Only the Top 67 Countries by task posting have been taken into account since the usage of the remaining nations was insignificant for our future comparing purpose. The Top67 Countries by task posting accounts together for the 88% of the Average total tasks, with the Top 3 – the English-speaking countries US, UK, and Australia - alone accounting on average for the 59% of the total tasks posted by day.

Country	Average number of tasks	% of total tasks	Country	Average number of tasks	% of total tasks
United States	58416	45.15%	Finland	184	0.14%
United Kingdom	10033	7.75%	Greece	184	0.14%
Australia	8038	6.21%	Lithuania	182	0.14%
India	7438	5.75%	Hungary	180	0.14%
Canada	7287	5.63%	Argentina	164	0.13%
Germany	2360	1.82%	Korea	144	0.11%
Israel	1785	1.38%	Latvia	139	0.11%
Netherlands	1291	1.00%	Jamaica	123	0.10%
France	1221	0.94%	Colombia	111	0.09%
Spain	1122	0.87%	Slovak Republic	97	0.07%
Switzerland	959	0.74%	Peru	94	0.07%
China	949	0.73%	Panama	92	0.07%
Russia	818	0.63%	Chile	84	0.06%
Malaysia	754	0.58%	Slovenia	81	0.06%
New Zealand	745	0.58%	Dominican Republic	77	0.06%
Ireland	680	0.53%	Costa Rica	73	0.06%
Italy	654	0.51%	Croatia	73	0.06%
Saudi Arabia	640	0.49%	Luxembourg	67	0.05%
Sweden	576	0.45%	Macedonia	65	0.05%
South Africa	539	0.42%	Venezuela	55	0.04%
Denmark	500	0.39%	Uruguay	53	0.04%
Belgium	467	0.36%	Tunisia	51	0.04%
Brazil	426	0.33%	Ecuador	34	0.03%
Thailand	408	0.32%	Bahamas	33	0.03%
Japan	370	0.29%	Iceland	32	0.02%
Norway	353	0.27%	Bolivia	32	0.02%
Mexico	337	0.26%	Guatemala	30	0.02%
Turkey	336	0.26%	Honduras	27	0.02%
Poland	331	0.26%	El Salvador	23	0.02%
Estonia	320	0.25%	Montenegro	19	0.01%
Austria	311	0.24%	Barbados	18	0.01%
Indonesia	255	0.20%	Nicaragua	8	0.01%
Czech Republic	206	0.16%	Paraguay	2	0.00%
Portugal	200	0.15%	Other Countries	15629	12%

#### TABLE 9 - AVERAGE DAILY TASKS IN UPWORK PER COUNTRIES



Finally, in order to get insights on the companies posting tasks, the author sorted tasks by client spending and analysed posts one by one to extrapolate, from feedbacks and description, the identity of the company requesting the service. By observing around 600 posts, the author collected the Top50 Companies by client spending; results are visible below in Table 10.

The total posts published by the Top50 Companies up to August, 8th 2017 are 47,734. Since for each task on Upwork companies usually require more than one freelancer, the total corresponding hires were 50,059, meaning an average ratio of 1:1,05. The 47,734 posts of Top50 Clients correspond to the 36.9% of the Average Total posts per day.

Customer Service, Web Development, Human Resource and Translation appears to be the most requested activities by the Top50 Clients.

80% of the Top50 Clients by spending are US-based companies, and, if we consider Canada, Australia, and New Zeeland, 92% of the list are English-speaking countries.

Up to August, 8th 2017, date in which these data have been gathered, the Top50 Clients spent together in the Platform more than 240 Million of dollars. Though, 30M+ belongs to Upwork internal, that, as it could have been expected, uses the pool of workers of the marketplace to run a vast range of activities of its business. Moreover, 70M+ is part of Upwork for Enterprise, meaning that the jobs they post are not only coming from one company but from all the firms that make use of Upwork Enterprise, the B2B service offered from the platform provider and mentioned in Chapter 2.

The average hourly rate offered by the Top50 clients is \$21.05, with a standard deviation of \$38.6. The variability, indeed, is too big to consider the value as a benchmark, since the diversity of the task posted and performed limit the standardization of the hourly rate offered by clients.

#### TABLE 10 - TOP50 CLIENTS IN UPWORK BY TOTAL SPENDING

Clients	Country	Total Spent	Job posted	Hires	Avg hourly rate paid	Main category
Upwork for Enterprises	US	40M+	15003	6833	\$ 18.73	ALL
Upwork internal	US	30M+	3330	3554	\$ 14.18	ALL
Upwork for Enterprises	US	30M+	2085	4649	\$ 10.94	Web Content
The Motley Fool	US	20M+	2811	2712	\$ 280.53	Graphic Design
Thumbtack	US	10M+	2758	7433	\$ 3.30	QA & testing
Sky Publishers	US	10M+	1203	1661	\$ 10.65	Article & blog writing
Wish	US	8M+	20	1035	\$ 8.68	Customer service
Dropbox	US	6M+	276	526	\$ 29.58	Video Production
Upwork Marketplace Operations	US	6M+	284	617	\$ 7.62	Other - Accounting & Consulting
Universal Weather and Aviation	US	6M+	515	573	\$ 20.02	Web Development
Idera	US	4M+	454	504	\$ 11.95	Technical support
Ezhome	US	5M+	694	1021	\$ 16.96	Other - Customer Service
lightinginthebox*	China	4M+	687	429	\$ 15.00	Customer service
Veeva System	Germany	4M+	762	1677	\$ 4.49	Web research
Traingl	Hong Kong	3M+	261	721	\$ 6.39	Photography
Fairlight	US	3M+	94	90	\$ 52.39	Web Development
МОВЕ	Australia	3M+	310	300	\$ 12.99	Accounting
SoftNAS	US	2M+	273	259	\$ 25.82	Network & System Administration
Corel	Canada	2M+	532	505	\$ 25.50	Other - IT & Networking
Sprklr	US	2M+	129	203	\$ 15.48	Data entry
Prescouter	US	2M+	834	1595	\$ 5.11	Copywriting
Synergy Sports Technology	US	2M+	33	53	\$ 31.32	Other - Software development
VCG group	US	2M+	246	164	\$ 5.23	Graphic Design
WRS Health	US	2M+	135	400	\$ 6.66	Human Resources
JotForm	US	2M+	192	317	\$ 8.64	Web Development
Snap Inc. (Snapchat)	US	2M+	616	630	\$ 29.56	Market & Customer research
ReadyCloud	US	2M+	71	82	\$ 26.73	Web Development
IdeasUnlimited	US	2M+	3426	1724	\$ 4.90	Personal/Virtual Assistant
ААЕРА	US	2M+	219	188	\$ 8.02	Search Engine Optimization
Quri	US	2M+	55	342	\$ 4.69	Other - Admin Support
Cibersql	US	2M+	77	66	\$ 24.99	Human Resources
Instapage	US	2M+	142	207	\$ 17.09	Article & blog writing
FCI	US	1M+	3717	2524	\$ 4.01	Translation
Procter&Gamble	US	1M+	757	1373	\$ 45.45	Translation - Design - Data mining
Couchsurfing	US	1M+	123	153	\$ 28.58	Copywriting - Data Collection
Adyax	France	1M+	190	149	\$ 16.87	Presentations
Emsisoft	New Zealand	1M+	99	94	\$ 18.18	Public Relations
ConsumerAffairs	US	1M+	122	763	\$ 4.69	Transcription
StudyKik	US	1M+	273	322	\$ 7.01	Human Resources
ZappySales	US	1M+	361	356	\$ 7.45	Technical support
RazorHorse	US	1M+	57	78	\$ 25.18	Other - Admin Support
PubNab	US	1M+	64	109	\$ 28.98	Web & mobile design
GrupoNoa	US	1M+	1278	520	\$ 5.33	Translation
Barclays	US	1M+	269	265	\$ 25.35	Other
SmartBrief	US	1M+	124	167	\$ 18.18	Other - Writing
Remal IT	Saudi Arabia	1M+	366	329	\$ 19.31	Game Development
Finder	Australia	1M+	488	604	\$ 7.35	Copywriting
Safebytes	Canada	1M+	203	222	\$ 14.46	Video Production
MMG	US	1M+	98	427	\$ 4.56	Telemarketing & Telesales
Shopify	US	1M+	618	534	\$ 7.59	Customer service

### 4.2.3. Assessing uncertainty in transactions

When reformulating the Gig Economy phenomenon in a Transaction Cost Economics perspective, Proposition 1 arises: theoretically, the greater the uncertainty in the transaction is, the lower firms will recur to On-Demand services.

In the specific case of Amazon Mechanical Turk and Upwork, uncertainty can be determined as: the degree to which the platforms' infrastructure protect parties and guarantee the transaction (internal uncertainty); the extent to which different countries regulate temporary forms of employment (external uncertainty).

In AMT, the contract is set unilaterally by the Requester, whose can set conditions and refuse to accept performance result while keeping the work done. The counterpart has no room to bargain, and the only decision for the worker is to accept or not the HIT.

The platform does not provide any details about the parties, making the ex-ante information asymmetry significant and the likelihood of unexpected contingencies expost realistic. Requesters can give feedbacks to Turkers, feedbacks that impacts the future hiring probability of the worker and incentivize the freelancer to have a good performance. Though Turkers cannot rate Requesters internally, but the diffusion of the platform gave birth to some forum or adds-in (e.g. Turkopticon) where ratings on companies are given.

Overall, AMT internal uncertainty seems to be relevant, especially on the workers' side; though given the menial nature of the tasks performed and the added value it gives to companies, this uncertainty does not seem to influence negatively the usage of the platform.

In Upwork, on the other side, the contract can also be bilaterally set by the parties. In case of flexible payment model, the company posts the task and the freelancers make and offer with the hourly rate and the estimated hours need; the company, then, chooses manually the freelancer(s) according to needs and preferences.

The platform shows both workers' profile – with qualifications, feedbacks and work histories – and Clients' ratings and task history so that the information asymmetry exante is reduced. The service Requester can monitor the work-in-progress and pay only

for the hours recorded in the Work diary. Overall, Upwork internal uncertainty is minimized as much as possible.

These findings, even if significant, do not allow the author to test analytically Proposition 1. In order to partially measure uncertainty, the author considers Country's uncertainty, the extent to which different nations regulate temporary forms of employment.

It is hence used the Temporary Employment Protection index, a numerical indicator (0 = very loose regulation; 5 = very strict regulation) built by OECD that allows evaluating analytically the relationship between uncertainty in the country and recourse to Ondemand services. The index "measures the procedures and costs involved in dismissing individuals or groups of workers and the procedures involved in hiring workers on temporary work agency contracts" (OECD, 2016) and considers "regulation of fixed-term and temporary work agency contracts with respect to the types of work for which their contracts are allowed and their duration; regulation governing the establishment and operation of temporary work agencies; requirements for agency workers to receive the same pay and/or conditions as equivalent workers in the user firm, which can increase the cost of using temporary agency workers relative to hiring workers on permanent contracts; regulation for temporary forms of employment" (*Ibid*.). Country-specific values are visible in Appendix 3: Upwork\_Analysis.

To assess the effects of uncertainty in transactions, the idea is to compare the Temporary Employment Protection Index with the usage of On-demand platform by countries. On AMT, this is not possible: the platform is structured in such a way that it is not possible to know the Requester' country of provenience in the description of the HIT; consequently, it is not possible to cluster and gather usage data of the platform by country. The only data available to the author are the provenience countries of the Top14 Companies (Table 7). Though, 79% of the companies are US based, making the data difficult to benchmark one to each other. The only thing to note is that the Temporary Employment index for the US is 0,3, the fifth from last value in the TEP Ranking of OECD.

On Upwork, instead, the platform is built in the way that it is possible to filter the availability of tasks by Client's countries. Country-specific data have been already presented in paragraph 4.2.1. and Table 9, and it is now possible to compare them with



the Temporary Employment Protection Index. If TCE holds, the greater the TEP index, the lower the country usage.

Since countries differ significantly by size and inhabitants, the Average number of tasks by countries has been divided by the population and multiplied by a thousand, so to obtain a standard measure of the country average usage. The relationship between Tasks per 1,000 inhabitants and Temporary Employment Protection Index by countries is represented in Figure 3 below, while the detailed data can be found in Appendix 3.

As the scatterplot shows, the relationship between Temporary Employment Protection Index and Tasks per 1,000 inhabitants is opposite to what expected. Even though regression results (see Appendix 3: Upwork\_Analysis) do not show a statistically relevant correlation, the general trend in the graph suggests that the greater the country uncertainty is, the greater companies recur to On-Demand services.



FIGURE 12 - DISTRIBUTION OF COUNTRIES BY UPWORK TASKS AND TEP INDEX

Source: Own-source

### 4.2.4. Assessing frequency in transactions

As Williamson (1979) states, high frequency implies that "costs of specialized governance structures will be easier to recover for large transactions of a recurring kind". Therefore, as Proposition 2 asserts, theoretically the more frequent an activity is needed by a company, the less the firm will perform it through On-demand platforms.



In order to assess it in AMT and Upwork, it is possible to evaluate how often the identified companies perform the same activity in the marketplaces. Though, to test Proposition 2, companies' frequency of activities in the platform is not enough, given that it does not allow the author to compare the results with the total need of those activities for each firm in the same period of time. Unfortunately, these indicators are both fastidious to quantify for companies themselves and difficult to find for the author.

Therefore, this analysis will be limited in assessing how often companies posts similar tasks and in which circumstances firms use On-Demand platforms to perform identical activities.

Company	Tasks	N°	%	Total \$ *	Total Minutes
	Transcribe Video	129	19%	\$ 1,973.28	37963
	LB Verbatim - Transcribe -	129	19%	\$ 1,218.29	37963
	Review media transcription for content accuracy.	127	19%	\$ 289.09	37374
Speechpad	Transcribe Audio A2583756	118	18%	\$ 1,648.00	34726
	LB Verbatim - Review	86	13%	\$ 289.00	25309
	Audio transcription	56	8%	\$ 290.00	16480
	Edit Video Caption	21	3%	\$ 80.51	6180
		666	100%	\$ 5,788.17	195995
	Full Text Review	13	25%	\$ 683.08	4680
	Transcribe up to Seconds of General Content to Text	11	21%	\$ 239.76	165
	Speaker ID	3	6%	\$ 163.47	1080
Crowdsurf	Review edit and score the transcription of General Content	12	23%	\$ 93.41	180
	Timing Review	3	6%	\$ 212.51	720
	QC Reject	11	21%	\$ 774.93	3360
		53	100%	\$ 2,167.94	10185
	Psychology Survey (~ 4 )	24	62%	\$ 14,011.81	759
	Compensation HIT	4	10%	\$ 1,554.87	120
SurveyComot	Willingness to Access Mental Health Services - Full Survey(~ 10 )	4	10%	\$ 1,556.87	180
Surveyconiet	Clearly countdown from 10 to 1 using the webcam. 30 second HIT. (~ 10 )	6	15%	\$ 2,335.30	30
	Exercise Behavior Survey(~ 15 )	1	3%	\$ 2.00	30
		39	100%	\$ 19,460.85	1119
	Make recordings of yourself saying short phrases.	11	61%	\$ 1,556.87	697
ACME	Long-Term qualification make recordings of yourself saying short phrases.	6	33%	\$ 7,589.73	380
ACIVIE	Native speakers of American English LISTEN TO and TRANSCRIBE short phrase audio files.	1	6%	\$ 583.83	63
		18	100%	\$ 9,730.42	1140
	Upload 1-minute screencast of a website (UK based home seller or buyer)	74	85%	\$ 29,802.34	3970
Userbob	Training qualifier to do UserBob HITs	13	15%	\$ 2,782.90	780
		87	100%	\$ 32,585.25	4750
	Copy Edit English Text	17	68%	\$ 1,985.01	393
Foxtrot	Proofread English Text	8	32%	\$ 146.35	51
		25	100%	\$ 2,132.91	444
Amazon Requester	Amazon Catalog Questions	135	93%	\$-	675
	Find posts related to Amazon Echo	10	7%	\$ 1,782.61	18174
		145	100%	\$ 1,782.61	18849
EZ Money	Take a screenshot on your iPhone iPad or iPod touch	2	22%	\$ 15.57	20
	iOS App Testing 10: itunes app download test + screenshot	7	78%	\$ 603.29	170
		9	100%	\$ 618.86	190
	[audio] Listen to audio and validate accent	6	13%	\$ 46.71	22
Bunny Inc.	[audio] Audio sample quality assurance #23946 - Audio wave	40	87%	\$ 311.37	147
		46	100%	\$ 358.08	169
20bn	[FUN TASK] Record quick videos of you	27	100%	\$ 4,651.14	1620
AudioKite	Listen to a Genre Category: Other song and answer a survey about it.	34	100%	\$ 1,891.59	2040
Ignite Media Solutions	Transcribe	13	100%	\$ 210.18	130
Hyperion	Detect if a Profile Contains Spam	9	100%	\$ 31.14	45
AMT Team	Profile Information	50	100%	\$-	3000

TABLE 11 – FREQUENCY OF ACTIVITIES BY COMPANIES IN AMT

\*Approximate estimation. See Appendix 2 for details.

Source: Own-source

For Amazon Mechanical Turk, the author considers the Top14 Companies presented in Paragraph 4.2.1 and clusters the typologies of tasks posted by each. As visible in Table 11 above, considering the economic value of the tasks and the time allocated to perform them, the frequency of some HITs posted by firms is significant.

An example is Speechpad, which posted in the referral period (30/07 – 08/08) 129 similar tasks of "Transcribe Video", 128 of "Verbatim" and "118 of "Transcribe Audio", corresponding to a total value of almost \$ \$4,839.57 performed ideally in 1,850 hours of work. Even though the company' overall frequency of transcriptions' activity is unknown, the frequency and the value of the tasks performed through AMT is still relevant for a 10-day referral period. According to TCE, in the circumstances of Speechpad, the company should be disincentivized to use On-Demand platform while motivated to internalize the "transcription" activity inside the company. Though, the Total HITs posted by the company on AMT from June, 20th 2017 is greater than 1,000 (see Table 7), indicating an opposite trend than the one forecasted through Transaction Cost Economics.

Given the structure of Upwork platform and the data collection process, the analysis performed in AMT cannot be replicated. For this marketplace, the author can only deduce from the "Client's Work History and Feedback" the tasks that a company usually performs, without quantifying the frequency or the corresponding time and economic value. The Top Frequent Category by Clients is already reported in Table 10.

The only value that can be deduced from data is the ratio between the number of hires and number of job posted by each client, visible in Table 12. Value greater than 100% indicates that the company hires through Upwork more people than the tasks it posts. Oppositely, a value below 100% means that for some tasks, companies do not hire people even if they posted the job. For companies like Wish, a 5175% Hires/Job posting ratio indicates that each task, on average, is performed by 51.75 people on the same time, reaching a value of 1,036,337 hours "used" through Upwork and a spending that is greater than \$8 million. For example, only in one post for "Detail Tagger", the company hired 87 people. Even without considering how many times Wish re-posted the task "Detail Tagger", the frequency of the activity is already relevant.

Being 36 of the Top50 Clients (72%) in Upwork above 100% for Hires/Job Posting ratio, we can suppose - without the need of benchmarks - that in TCE terms these companies



shouldn't have performed those tasks On-Demand but internalized the activities in the companies.

Nevertheless, the trends of the retrieved data are likely to suggest the opposite.

Clients	Hires/job posting ratio	Clients	Hires/job posting ratio	
Wish	5175%	ReadyCloud	115%	
ConsumerAffairs	625%	Universal Weather and Aviation	111%	
Quri	622%	Idera	111%	
MMG	436%	Safebytes	109%	
WRS Health	296%	Upwork internal	107%	
Traingl	276%	Snap Inc. (Snapchat)	102%	
Thumbtack	270%	ZappySales	99%	
Upwork for Enterprises 2	223%	Barclays	99%	
Veeva System	220%	MOBE	97%	
Upwork Marketplace Operations	217%	The Motley Fool	96%	
Prescouter	191%	Fairlight	96%	
Dropbox	191%	Emsisoft	95%	
Procter&Gamble	181%	Corel	95%	
PubNab	170%	SoftNAS	95%	
JotForm	165%	Remal IT	90%	
Synergy Sports Technology	161%	Shopify	86%	
Sprklr	157%	ΑΑΕΡΑ	86%	
Ezhome	147%	Cibersql	86%	
Instapage	146%	Adyax	78%	
Sky Publishers	138%	FCI	68%	
RazorHorse	137%	VCG group	67%	
SmartBrief	135%	lightinginthebox*	62%	
Couchsurfing	124%	IdeasUnlimited	50%	
Finder	124%	Upwork for Enterprises 1	46%	
StudyKik	118%	GrupoNoa	41%	

 TABLE 12 - HIRE/JOB POSTING RATIO BY CLIENTS IN UPWORK

SOURCE: OWN-SOURCE

### 4.2.5. Assessing asset specificity in transactions

As Proposition 3 stated, according to TCE the more the activity is central to the value proposition of the firm, the less the company will make it perform to On-Demand workers.

In order to assess it in AMT and Upwork, the author confronted the typologies of tasks posted in the marketplaces with the value proposition of the companies. Unlike the evaluation of Uncertainty and Frequency in transactions, the methodology applied for asset specificity is not objective but subject to author's perception and consideration.



In the case of AMT, the author assesses the centeredness of the activities performed by companies through the marketplace (Table 11) by attributing them a value from 1 to 3 [1=Non-central/ancillary activity; 2= ordinary tasks; 3=Crucial/central activity]. Values have been attributed in accordance with the definition that Williamson gives to human asset specificity, namely those skills "acquired in a learning-by-doing fashion and imperfectly transferable across employers" (Williamson, 1979). Moreover, the following 3-items framework proposed by Zaheer and Venkatraman (1994) has been considered:

- 1. The skill level of the employees working on the activity.
- 2. The extent of training needed.
- 3. The workflows and routines of the activity.

Table 13 below shows the average value obtained for each company. Detailed computation is visible in Appendix 2: AMT\_Analysis.

Company	Avg Centeredness	Company	Avg Centeredness
Speechpad	3	EZ Money	1
Crowdsurf	3	Bunny Inc.	2
SurveyComet	2.4	20bn	3
АСМЕ	1.5	AudioKite	3
Userbob	3	Ignite Media Solutions	1
Foxtrot	1	Hyperion	1
Amazon Requester	1	AMT Team	3

TABLE 13 – AVERAGE CENTEREDNESS OF ACTIVITIES BY COMPANIES IN AMT

Source: Own-source

57% of the Top14 Companies on AMT has an Average Centeredness of activities greater than 2, meaning that the tasks usually posted on the platform are often related and specific to the Requesters' value proposition and contain valuable knowledge, procedures, and processes with low redeployment. In other terms, asset specificity characterizing many tasks posted in the platform is high in relation to what firms 'core business is, and this should discourage companies in their use of on-demand platforms rather than increasing their usage.



For Upwork, the author used a similar approach, if not from the fact that the centeredness indicator has been attributed only to one task per each Top50 clients, excluding Upwork for Enterprises and Upwork Internal. Tasks have been selected by observing the daily usage clients make of the marketplace and extracting the ones that appeared to be most recurring; Appendix 3: Upwork\_Analysis provides the links referred to the tasks that have been assessed. To those 47 posts, the author attributed a value from 1 to 3, where, again, 1= Non-central/ancillary activity; 2= ordinary tasks; 3=Crucial/central activity. The obtained results are visible in Appendix 3: Upwork\_Analysis [Sheet: Centeredness of tasks].

In general, we observe that 40% of the tasks are likely to be specific and crucial for firms' value proposition since the embedded knowledge and processes are likely to be acquired through learning-by-doing. An example is SmartBrief, a company providing industry news and information and posting in Upwork Writing and Editor positions daily. Likewise, Synergy Sports Technology, a company that creates web-based, on-demand video-supported basketball analytics and demanding frequently through Upwork Software Engineers for its core offering.

## 4.3. Findings

The aim of this Chapter was the one of understanding how and why the rise of On-Demand platforms transformed the match between workforce and employers into immediate and efficient, making Gig services a popular and convenient solution for many companies. It has been shown how in TCE terms, companies' choice between freelancers and employees is nothing more than an updated "make or buy" dilemma and deduced how this choice should be a matter of minimizing transaction costs. Assumed that TCE holds, the dimensions that Williamson considered to influence transactions costs can be used to explain the circumstances to which companies recur to On-Demand workers. Hence, Propositions on (1) uncertainty, (2) frequency of transactions and (3) asset specificity have been built, with the goal of analyzing the data collected from Amazon Mechanical Turk and Upwork to get insights on what influence, indeed, companies in their "make or buy" dilemma.

Therefore, the data collected through the marketplaces have been processed and clustered in a different way: first, with the scope of getting an overview of their operating principle, average usage, and practices; second, in order to gather specific information to support or refuse the three Propositions.

Unusual to realize that the output of the analysis partially discredited P1, P2, and P3.

For Proposition 1, the author assessed how in AMT, the uncertainty in the platform infrastructure as well as in the country of greater popularity of services, does not disincentivize the usage of the marketplace. Likewise, in Upwork, by observing quantitatively the relationship between countries' Temporary Employment Protection Index and Tasks per 1,000 inhabitants it comes out that the correlation between uncertainty and platform's usage is negative and opposite to what stated in Proposition 1.

In the same way, if Proposition 2 stated that the greater the frequency of the activity is, the more a company will internalize it, the observation of data showed the opposite trend. In Amazon Mechanical Turk, indeed, the results have been collected by analyzing the number of identical HITs posted by the Top14 Companies, and observing how firms continue to recur to On-Demand workers even in conditions of high frequency. In Upwork, instead, the outcome has been deduced computing the Hires/Job posting ratio: since 72% of the Top56 Clients have a Hires/Job Posting ratio greater than 100%, the companies recur to On-Demand workers more times for identical tasks.

Finally, Proposition 3 has been assessed by comparing the typologies of tasks posted in the marketplaces with the value proposition of the Requesters, with the aim of verifying if the more the activity is central for the firm, the less it will make it perform to On-Demand workers. Although the methodology applied was subject to author's perception and consideration, the results obtained are likely to be valid, and to show that some companies (around 50% both for AMT and Upwork) recur to Gig workers even in circumstances of high-asset specificity.



These findings are everything but negative for the scope of this research. Indeed, confuting the propositions that theory originated, they showed how Gig Economy transformed the traditional business scenario, upsetting the rules of the game and disrupting the logic of value creation and capture.



# 5. Discussion

The aim of this Chapter is to discuss findings obtained in the previous section. The author, indeed, contextualizes and gives them a relevance. Based on the results of the work, the Chapter proceeds with recommendations to companies that want to use On-Demand workforce and succeed in long-term. Finally, the author provides some suggestions for further research.

# 5.1. The transaction 2.0

Up to twenty years ago, finding an outside provider for every function and processing a multitude of contracts and transactions, not only was far from reality, but also considered a "worst practice" for companies to avoid. Given the shortage of means and the slow communication, insourcing functions was the only way to avoid transaction costs, especially in circumstances of activities governed by uncertainty, frequency and asset specificity.

Then Gig Economy exploded, with On-Demand platforms disrupting traditional business rules; with the right mix of software, hardware, operations, and networks they provided new modes, processes, and services that overcame the limits that companies in the era before the internet used to face every day. If back at Williamson time, it was cheaper to perform many functions within the organization rather than going to the market every time something needed to be done, in our days On-Demand platforms allow companies to perform those functions outside the firm, more efficiently and in circumstances of uncertainty, frequency and asset specificity.

As findings of the previous Chapter have shown, indeed, the factors Williamson used to consider impacting on transaction costs have now a different effect on the transactions. Whether the uncertainty is high, or transaction recurrent, or asset specificity relevant, companies' usage of freelancers and on-demand platforms does not appear to be impacted. In some circumstances, the use seems even to be boosted in presence of these factors, since the set of shared techniques, technologies, and interfaces platforms' providers developed manage to some extent to demarcate the impacts of the three dimensions.

Reputational mechanisms fight against uncertainty, making on-demand transactions a risk-free zone compared to traditional market exchange. The perfect example is Upwork, designed and structured in the way that feedback history represents the business card users leverage on the platform. By rating performance at different levels, both companies and workers have the power to influence the future hiring success of the counterpart, with reviews meant to both reduce information asymmetry, establish trust between parties and eliminate uncertainty. Information asymmetry is reduced ex-ante, with signaling and screening that become the key foundations of the marketplace: signaling through self-description and work and feedback history, and screening with qualifications, assessment tools and workers' searches and filtering.

With uncertain terms, conditions, and protection, parties have the room to act opportunistically: though, hold-up problems are not likely to happen given that the reputational damage it may create is greater than the short-term surplus the party could gain.

If uncertainty is overcome, rapidity and efficiency of digital platforms easily support frequent transactions. Companies bear no cost in replicating posts or transactions; on the contrary, the more the task is performed through the platform, the more the company get knowledge on the market, find a pool of workers to rehire and learn to maximize the output minimizing resources to share. All that, with both the total flexibility of balancing instantly the amount of work required to the real needs and the convenience of avoiding the costs associated with employment relationships.

Nevertheless, in circumstances of high asset specificity, platforms safeguards parties no less than companies' internal mechanisms would. Learning-by-doing jobs can be performed through the platform, especially by both posting real positions rather than "gigs" and rehiring many times the same worker for the same activity; transactionspecific investments (e.g. training) occurs in On-demand transactions as well as in the



traditional relationship, and bilateral dependency may arise both online and offline. The only differences between the two are that digital platforms' reputational mechanisms and transparency decrease the likelihood of unexpected circumstances and opportunistic behaviors and that companies, possibly, sacrifice those sunk costs deriving from high asset specificity and low redeployment to gain from low employment costs and high efficiency in matching.

Indeed, two more insights that observation reveals are worth to be mentioned:

- If initially the usage of on-demand services was limited to gigs or ancillary activities, the analysis performed showed how, if marketplaces are wellstructured, companies use them to attract and find crucial and central workers and skills.
- Beyond substituting existing providers and business models, the existence of On-Demand platforms generates new interactions, functions, and activities and gives companies the chance to solve issues outside the reach of traditional work practices. By having access to an unlimited pool of individuals and capabilities, firms can call in help when needed to perform those activities that before were considered as costly, or unnecessary or inefficient.

The resulting context suggests how firms are able to make use of outsourcing in different circumstances. Referring one more time to Ronal Coase, this form of outsourcing should reduce firms' size until "the costs of organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organizing in another firm" (Coase, 1937). Firm that, though, should grow infinitely since it no more suffers from increasing marginal costs: world is becoming a "Zero marginal cost society", where "technological revolution might bring marginal costs to near zero, making goods and services priceless, nearly free, and abundant, and no longer subject to market forces" (Rifkin, 2014).

Whether the interaction among phenomena and factors will enlarge or reduce firm' size infinitely, the direction of change will be the one of de-structuring the concept of company that has characterized the last century. Traditional capitalism will slowly decline, and firms will evolve towards a non-ownership culture. The economy will be no longer fed by firms with a specific number of employees, boundaries and formal hierarchies but driven by a community of economic agents, each characterized by a core organization that relies on an undefined network of external providers (Salim, 2014).

Companies must learn to be lean without giving up hierarchy in the management of the relevant business relationships; they must become agile in structure and assets and they must exploit those network effects that enable continuous exchanges and growths. In other terms, organizations must become "Exponential", namely "build upon information technologies that take what was once physical in nature and dematerialize it into the digital, on-demand world" (*Ibid*). For any ExO, "having staff on-Demand is a necessary characteristic for speed, functionality and flexibility in a fast-changing world" (*Ibid.*) but managing it in the right way will represent the key success factor. The real question in the digital platform era, indeed, is not how many in-house activities will be converted into independent work, but whether the use of On-Demand services is actually creating value for the firm. At this regard, in the light of the observation and analysis, next paragraph will provide some recommendations for firms willing to use On-Demand workforce and succeed in long-term. In this way, the second research question can be covered and answered.

# 5.2. Recommendations

When facing the "make or buy" dilemma and deciding whether to transfer activities to freelancer rather than keeping them in-house, considerations should not be limited to cost: knowledge leaks, loss of in-house competencies, shortage of control, misalignment of workers are only a few of the risks that the organization may face. Following the circumspections this paragraph provides will help companies to minimize their risk of failing.

#### Self-evaluate readiness and needs

Being Gig Economy at the peak of its popularity does not mean that every company should necessarily recur to Gig services. For some companies, in some industries, at some stages

of development, On-demand workers may be useless or even harmful for the organization performance: regular employees can be fundamental when companies pursue stability, when maintaining knowledge and processes embedded will determine success, when in crisis circumstances having a great culture is better than reducing costs.

Assessing whether and how the firm needs On-Demand jobs will determine if the company will succeed or not. Once the company realizes the need or the convenience of On-Demand jobs, the success is still not guaranteed. Providing the exact job description, deciding the ideal reward, choosing the qualifications and the matching worker(s), setting the right expectations, ensuring quality and correct performance; they are just a few of all the processes that must be done in the right way. In firms that want to succeed, developing new hiring processes, training new recruiters, finding new methodologies must go hand to hand with their usage of On-demand platforms and services.

#### Non-Ownership as a new key success driver

When deciding to become agile, companies should consider that having the staff On-Demand is not enough. If for human assets they must recur to Gig Services, firms must learn to rent and leverage physical assets to be flexible, fast and forward-thinking. Again, renting is anything but a 3rd Millennium discovery: if before, leasing was used for noncentral assets to move them from the balance sheet, now it should be used every time an asset is scarce, whether the areas are strategic or not. In the era of collaborative consumption, finding information-based assets is easy and allows companies to scale quickly on a global basis, to change direction rapidly and to remove the need for managing owned assets (Salim, 2014).

#### Parceling work without dehumanizing it

The common practice in the Gig Economy scenario is the one disaggregating jobs into more discrete tasks to make them standardized, repeatable and easily outsourced. Not far from what Amazon Mechanical Turk analysis showed, Kittur et al. (2013) defined the phenomenon as a new Taylorism, where "organizations optimize cognitive efficiency at the expense of education and skill development". Having many microtasks with minimum skills and qualification is surely cost convenient, but not always motivating for workers who perform them.


Finding the right balance between parceling and motivating workers will hence play a crucial role for companies that want to leverage Gig Economy to succeed. Without sacrificing the benefits that Gig Economy offers, companies must find ways to incentivize workers in their short-term relationships; parceling an activity in many tasks and ignoring the human side of the job may trivially reduce the quality of one task and exponentially of the entire activity or function.

#### Supporting and inciting workers' protection

When scholarly community refers to Gig Economy, the concern raised is to what extent freelances are safeguarded by law in different countries. The issues of workers' protection made the spread of platforms to be interpreted as an obstacle to the social being rather than a boost in the productivity. The perception that the phenomenon has right now feeds a vicious circle of individuals refusing to use platforms if don't necessary and companies avoiding gig services with the fear of having a reputational loss.

Companies, within the limits of possibilities, should sustain, fight and implement actions to safeguard workers rather than exploiting the uncertainty that currently is leading. Lobbying with institutions, deciding internal minimum wage setting, providing bonus or benefits to Gig workers etc., they will all help in giving the company a good reputation and in shifting the vicious circle into a virtuous one. The network effect generated by the platforms enables that, as soon as an individual has a positive experience with a client, an enormous number of individuals are willing to trust and work with the firm. Therefore, allocating resources to workers' protection will make the company appealing to a larger pool, giving the firm the possibility to pick the best workers and to gain a significant reputational advantage.

#### Abandoning traditional hierarchies and creating new governance mechanisms

Managing workers On-Demand by companies does not necessarily imply that hierarchies should be abandoned. Of course, in the circumstances of flexible and boundary-less organizations, it is impossible to think to hierarchy as those rigid structures that traditionally characterized companies, where each employee had a role, a boss, and a team to manage.



Companies rather need to figure out a way to hierarchically manage individuals by keeping those benefits hierarchy offers e.g. - coordination, decision making, incentives and quality and performance controls -.

Aid by On-demand platforms' providers, companies should take inspiration from traditional governance mechanisms, learn to leverage platforms' tools (skills matching, tracking systems, quality assurance, non-monetary incentives) and create mixed project teams, combining traditional full-time employees with virtual on-demand or part-time workers on an as-needed basis.

### 5.3. Suggestions for further research

Being the phenomenon of Gig Economy at an early stage of development, findings of this work set the ground for interesting topics and fields for further exploration. Following directions are suggested:

- To carry out the analysis of the usage of On-Demand platforms to other marketplaces beyond AMT and Upwork - although relevant, conducting the analysis elsewhere would test if Propositions 1-2-3 defined in Chapter 4 hold, and therefore would potentially enlarge the validity of the findings.
- To analyze the traffic of Gig Platform in a longer span of time or repeat it in a different period beyond giving the opportunity to see if the projections made are really holding, it can potentially show new insights or trends e.g. cyclicity of use for some companies or industries.
- To analyze countries and cultures' differences in platforms' usage even though this work provided a screenshot of countries' usage in Upwork, it didn't' explored the differences in habits and practices. This topic, interesting and useful, would help to shed a brighter light in why in some countries Gig Economy reached way greater peaks of diffusion compared to others.



- To investigate on typologies of firms demanding Gig services and their referral industries – clustering companies by sectors would permit to develop a framework that explains which industries are leading in the usage of On-Demand services and contributing to the evolution of Gig Economy.
- To explore companies' experiences in the use of the marketplace by conducting client questionnaires, it could be interesting to get insights on the rationales that pushed them in recurring to Gig Services, as well as on the journey experiences they had.
- To face the same topic from a different perspective using TCE, the author focused on analyzing transaction in AMT and Upwork investigating on uncertainty, frequency, and asset specificity. Using another perspective new perspectives and insights would for sure emerge.



# 6. Conclusion

The general scope of this work was the one of understanding the Gig Economy phenomenon from a company perspective, with the attempt of explaining the factors that influence firms' choice to recur or not to On-Demand services. In order to do this, the author chose to analyze the two most popular marketplaces – Amazon Mechanical Turk and Upwork – and apply Transaction Cost Economics to them.

In Chapter 1, the author introduced the topic, explaining its relevance and the motivation behind the author choice to deal with it. From the problem definition, the author deduced the two research questions – RQ1: *To what extent the Transaction Cost Economics' dimensions of uncertainty, frequency, and asset specificity can be useful to explain the "make or buy" dilemma in the Gig Economy scenario? RQ2: How will firms' boundaries and practices be shaped to make competition sustainable in the future?* -. Hence, it explained the structure that the thesis adopted.

In Chapter 2, the author contextualized the rise and the evolution of Gig Economy. After a brief description of the drivers that contributed to the birth of On-Demand online services, the section proceeded in explaining the general working principle of the marketplaces, as well as in giving a screenshot of the current competitive arena. Hence, the focus shifted in describing Amazon Mechanical Turk and Upwork, their value proposition, the service offerings, and their key characteristics.

Chapter 3, instead, was aimed to describe the methodology of the thesis. From the research philosophy to the design, the author explained the academic approach chosen, emphasizing the reasons behind the decisions to use Pragmatism, Abduction and a mixed-methods approach. Hence, the data collection methodologies from AMT and Upwork have been presented, as well as the quality of data and the limitations of the work reported.

It followed Chapter 4. The scope was the one of understanding how and why the rise of Gig platforms made On-demand work a popular and convenient solution for many companies.



It started by showing how, in TCE terms, companies' choice between freelancers and employees represents an updated "make or buy" dilemma and deduced Propositions on (1) uncertainty, (2) frequency of transactions, and (3) asset specificity by applying the dimensions that Williamson defined to the context of Gig Economy.

Therefore, by analyzing the data collected from Amazon Mechanical Turk and Upwork to get insights on what influence companies in their choice, the main contribution of this thesis emerged: factors Williamson used to consider impacting on transaction costs have now a different effect on the transactions through digital platforms. Whether the uncertainty is high, or transaction recurrent, or asset specificity significant, companies' usage of freelancers and on-demand platforms does not appear to be impacted. In some circumstances, it seems to be even encouraged, since the infrastructures of the platforms manage to some extent to demarcate the impacts of the three dimensions. As such, the first research question has been successfully answered.

Chapter 5 discussed the findings, shifting the work to the next level. Contextualizing the results, it came out how in the contemporary economy the traditional concept of organization is being de-structured, with firms moving towards a non-ownership culture. To succeed in long-term, companies should supersede boundaries, formal hierarchies, and organigrams to shift into a network of agents with a central organization and undefined ties with external providers. In order to do so, they must leverage the potentials that On-Demand platforms offer, self-assessing the need of outsourcing and structuring the process at best. As such, also the second research question has been successfully answered.

The work provided different applicable and well-grounded implications; though, despite the effort of the author, many limitations are still reducing the relevance of the work, of all, the shortage of time and the novelty of the topic. Nonetheless, even if the findings are not so relevant to serve as a theory for future predictions or explanations, the contribution it gives to the field will still move the research in the Gig Economy area a step ahead.



## References

Abraham, K., Haltiwanger, J. C., Sandusky, K., & Spletzer, J. R. (2016). Measuring the 'gig'economy. In Society of Labor Economists Annual Meetings, May.

Adler, T. R., Scherer, R. F., Barton, S. L., & Katerberg, R. (1998). An empirical test of transaction cost theory: Validating contract typology. Journal of Applied Management Studies, 7(2), 185.

Aloisi, A. (2015). Commoditized workers: Case study research on labor law issues arising from a set of on-demand/gig economy platforms. Comp. Lab. L. & Pol'y J., 37, 653.

Amazon Mechanical Turk. (2017). Retrieved September 05, 2017, from https://www.mturk.com/mturk/welcome

Benkler, Y. (2004). Sharing nicely: On shareable goods and the emergence of sharing as a modality of economic production. Yale Law Journal, 273-358.

Birgillito, M. (2016). Lavoro e nuova economia: un approccio critico. I molti vizi e le poche virtù dell'impresa Uber. Labour & Law Issues, 2(2), 57-79.

Cardon, D., & Casilli, A. A. (2015). Qu'est-ce que le digital labor?. Ina.

Cherry, M. A., & Aloisi, A. (2016). Dependent Contractors in the Gig Economy: A Comparative Approach. Am. UL Rev., 66, 635.

Coase, R. H. (1937). The nature of the firm. economica, 4(16), 386-405.

Collins, H. (2010) "Creative Research: The Theory and Practice of Research for the Creative Industries" AVA Publications, p.38

Dalal, A. K., & Priya, K. R. (2016). Introduction to qualitative research. Qualitative Research on Illness, Wellbeing and Self-Growth: Contemporary Indian Perspectives.

De Stefano, V. (2015). The rise of the just-in-time workforce': On-demand work, crowd work and labour protection in the gig-economy'.

Doan, A., Ramakrishnan, R., & Halevy, A. Y. (2011). Crowdsourcing systems on the worldwide web. Communications of the ACM, 54(4), 86-96.

Donovan, S. A., Bradley, D. H., & Shimabukuru, J. O. (2016). What Does the Gig Economy Mean for Workers?.

Driscoll, D. L., Appiah-Yeboah, A., Salib, P., & Rupert, D. J. (2007). Merging qualitative and quantitative data in mixed methods research: How to and why not. Ecological and Environmental Anthropology (University of Georgia), 18.

Easley, D., & Ghosh, A. (2015). Behavioral mechanism design: Optimal crowdsourcing contracts and prospect theory. In Proceedings of the Sixteenth ACM Conference on Economics and Computation (pp. 679-696). ACM.

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2012). Management research. Sage.



Forrester Consulting . (2017). Address Critical Skill Gaps With On-Demand Knowledge (Publication). Commissionated by Catalant.

Frei, B. (2009). Paid crowdsourcing. Current state & progress toward mainstream business use, smartsheet. Com report, Smartsheet. Com, 9.

Friedman, G. (2014). Workers without employers: shadow corporations and the rise of the gig economy. Review of Keynesian Economics, 2(2), 171-188.

Google Trends (2017). Gig Economy Interest Over Time. Retrieved September 06, 2017, from https://trends.google.com/trends/explore?date=2009-08-06%202017-09-06&q=gig%20economy

Greenwald, R. A. (2012). Contingent, Transient, and At-Risk: Modern Workers in a Gig Economy. Labor Rising: The Past and Future of Working People in America, 111-25.

Henten, A. H., & Windekilde, I. M. (2016). Transaction costs and the sharing economy. Info, 18(1), 1-15.

Ho, C. J., Slivkins, A., Suri, S., & Vaughan, J. W. (2015, May). Incentivizing high quality crowdwork. In Proceedings of the 24th International Conference on World Wide Web (pp. 419-429). International World Wide Web Conferences Steering Committee.

Holcomb, T. R., & Hitt, M. A. (2007). Toward a model of strategic outsourcing. Journal of operations management, 25(2), 464-481.

Ipeirotis, P. G. (2010). Analyzing the amazon mechanical turk marketplace. XRDS: Crossroads, The ACM Magazine for Students, 17(2), 16-21.

Ismail, S. (2014). Exponential Organizations: Why new organizations are ten times better, faster, and cheaper than yours (and what to do about it). Diversion Books.

John, G., & Weitz, B. A. (1988). Forward integration into distribution: an empirical test of transaction cost analysis. Journal of Law, Economics, & Organization, 4(2), 337-355.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational researcher, 33(7), 14-26.

Kenney, M., & Zysman, J. (2016). The rise of the platform economy. Issues in Science and Technology, 32(3), 61.

Kessler, S. (2015). "The gig-economy won't last because it's being sued to death", Fast Company available at http://www.fastcompany.com/3042248/the-gig-economywont-last-because-its-being-sued-to-death (retrieved 06 September 2017).

Kittur, A., Nickerson, J. V., Bernstein, M., Gerber, E., Shaw, A., Zimmerman, J., ... & Horton, J. (2013). The future of crowd work. In Proceedings of the 2013 conference on Computer supported cooperative work (pp. 1301-1318). ACM.

Lin, G. (2009). Higher Education Research Methodology-Literature Method. International Education Studies, 2(4), 179-181.



Manyika, J., Lund, S., Robinson, K., Valentino, J., & Dobbs, R. (2015). A labor market that works: Connecting talent with opportunity in the digital age. June. Mckinsey Global Institute.

Manyika, J., Lund, S., Bughin, J., Robinson, K., Mischke, J., & Mahajan, D. (2016). Independent work: Choice, necessity, and the gig economy. McKinsey Global Institute. October.

Martin, D., Hanrahan, B. V., O'Neill, J., & Gupta, N. (2014). Being a Turker. In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (pp. 224-235). ACM.

Mrass, V., Peters, C., & Leimeister, J. M. (2016). New Work Organization through Crowdworking Platforms-A Case Study.

Myers, M.D. (2008) "Qualitative Research in Business & Management" SAGE Publications.

OECD. (2016). OECD Indicators of Employment Protection. Retrieved September 06, 2017, from http://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm

Rifkin, J. (2014). The zero-marginal cost society: The internet of things, the collaborative commons, and the eclipse of capitalism. St. Martin's Press.

Rogers, B. (2015). The social costs of Uber. U. Chi. L. Rev. Dialogue, 82, 85.

Rosenblat, A., & Stark, L. (2015). Uber's Drivers: Information Asymmetries and Control in Dynamic Work. Retrieved September 5, 2017.

Said, C. (2015). "Growing voices say gig workers need protections, benefits", SFGate

Saunders, M., Lewis, P., & Thornhill, A. (2009). Research methods for business students. Essex, UK: Pearson Educated Limited.

Saunders, M. N. (2011). Research methods for business students, 5/e. Pearson Education India.

Sim, M. (2010). The intangible costs of human-resource outsourcing. Human Resource Management International Digest, 18(6), 3-4.

Smith, R., & Leberstein, S. (2015). Rights on-demand: Ensuring workplace standards and worker security in the on-demand economy. National Employment Law Project, September.

Sriram, V., Krapfel, R., & Spekman, R. (1992). Antecedents to buyer-seller collaboration: An analysis from the buyer's perspective. Journal of Business Research, 25(4), 303-320.

StatVisions. (2017). Population by country. . Retrieved September 7, 2017, from http://statvisions.com/

Teddlie, C., & Tashakkori, A. (2003). Major issues and controveries inthe use of mixed methods in the social and behvioral sciences. Handbook of mixed methods in social & behavioral research, 3-50.



Teo, Thompson & Yu, Yuanyou. (2005). Online buying behavior: A transaction cost economics perspective. Omega. 33. 4

Thierer, A., Koopman, C., Hobson, A., & Kuiper, C. (2015). How the Internet, the sharing economy, and reputational feedback mechanisms solve the lemons problem. U. Miami L. Rev., 70, 830.

Uber. (2017). Retrieved September 06, 2017, from https://ride.uber.com/

Upwork (2017). Retrieved September 05, 2017, from https://www.upwork.com

Vakharia, D., & Lease, M. (2015). Beyond Mechanical Turk: An analysis of paid crowd work platforms. Proceedings of the iConference.

Williamson, O. (1979). Transaction-cost economics: The governance of contractual relations, Journal of Law and Economics, vol. 22, no. 2, 233-261.

Williamson, O. (1981). The economics of organization: The transaction cost approach. The American Journal of Sociology, vol. 87, no. 3, 548-577.

Williamson, O. E. (1983). Organization form, residual claimants, and corporate control. the Journal of Law and Economics, 26(2), 351-366.

Williamson, O. E. (1985). The economic institutions of capitalism. Simon and Schuster.

Wood-Doughty, A. (2016). Do Employers Learn from Public, Subjective, Performance Reviews?.

Zaheer, A., & Venkatraman, N. (1994). Determinants of electronic integration in the insurance industry: an empirical test. Management science, 40(5), 549-566.



# Appendix 1: APPENDIX 1 - AMT\_Input

Appendix 1 is an excel file provided as a separate file with the name of APPENDIX 1 - AMT\_Input.xls.

*The following Table lists the Sheets of the file with a brief description for each:* 

Sheet name	Description	
30-07-17	All tasks available in Amazon Mechanical Turk on 30-07-2017.	
31-07-17	All tasks available in Amazon Mechanical Turk on 31-07-2017.	
01-08-17	All tasks available in Amazon Mechanical Turk on 01-08-2017.	
02-08-17	All tasks available in Amazon Mechanical Turk on 02-08-2017.	
03-08-17	All tasks available in Amazon Mechanical Turk on 03-08-2017.	
04-08-17	All tasks available in Amazon Mechanical Turk on 04-08-2017.	
05-08-17	All tasks available in Amazon Mechanical Turk on 05-08-2017.	
06-08-17	All tasks available in Amazon Mechanical Turk on 06-08-2017.	
07-08-17	All tasks available in Amazon Mechanical Turk on 07-08-2017.	
08-08-17	All tasks available in Amazon Mechanical Turk on 08-08-2017.	



# Appendix 2: APPENDIX 2 – AMT\_Analysis

Appendix 2 is an excel file provided as a separate file with the name of APPENDIX 2 – AMT\_Analysis.

*The following Table lists the Sheets of the file with a brief description for each:* 

Sheet name	Description
ALLINPUTS	Entire datasets of posts without duplicates.
Overall	Main indicators of observation.
Top Requesters	Top10 Requesters with computation.
Requesters_ALL	Entire datasets of Requesters.
Top Keywords	Top Keywords with computation
Keywords and categories_ALL	Entire datasets of Keywords.
Worksheet 1	Draft data: total rewards and total time per Requesters.
Worksheet 2	Draft data: keywords, total time and rewards.
Worksheet 3	Draft data: keywords and frequency.
Worksheet 4	Draft data: type of requesters and frequency.
Worksheet 5	Draft data: activities and frequency.
Worksheet 6	Draft data: assessment of Centeredness.
Worksheet 7	Draft data: pivot table.



## Appendix 3: APPENDIX 3 – Upwork\_Analysis

Appendix 3 is an excel file provided as a separate file with the name of APPENDIX 3 – Upwork\_Analysis.

*The following Table lists the Sheets of the file with a brief description for each:* 

Sheet name	Description
Overview	Data observed by categories.
Clients	Top50 Clients and main indicators.
Hires-job posting ratio	Hires-job posting ratio per each Top50 client.
Empl.Protection Index & UW tasks	TEP index and tasks by countries.
Regression	Regression on TEP index & tasks by countries dependency.
Input_Country	Data observed by countries.
Centeredness of tasks	Assessment of Centeredness of tasks by country.
Worksheet 1	Draft sheet: Figure 12 building.
Worksheet 2	Draft sheet: Table 9 building.