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Technology Integration for Restaurants & Hospitality Industry in the Year 2025

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Master's Thesis
Degree Programme in Tourism
2017

Haaga-Helia
University of Applied Sciences

Abstract

Date 21.7.2017

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Degree programme
Degree Programme in Tourism

Report/thesis title	**Number of pages and appendix pages**
Technology Integration for Restaurants & Hospitality Industry in the Year 2025	**71**

The aim of this research is to serve the reader with an experience that evaluates the direction of how technology in restaurants and the overall hospitality industry will change throughout the coming decade and how it will look in the year 2025.

The key concepts pertaining to the restaurant and hospitality industries growth through technological integration is based primarily on trends that have helped define today's society. Everything moves faster and that is a direct reflection as to how we have evolved as a species. So why would we not intertwine our daily routines and endeavors with more technology driven interactions the likes of; VR, AI, Robotics, Augmentation and Big Data.

Using technologies to establish a stronger, faster existence will not only provide us a transient mobility in the future but will also spread itself thought all industries, such as the global agricultural marketplace. The next decade will help define us as a species and see if Darwin's theories will really become a concern.

The Qualitative Research tool used in the study was the Delphi technique, which allowed us to design an interview for a selected group of restaurant and industry professionals to convey their thought and ideas of the future. This forecasting technique would help us to reveal certain similarities that many professionals believe will be the future of the industry pertaining to technology and its integration.

The impact of this work should allow the reader, to translate the writing into a constructive metaphor pertaining to intuitive thought. The industry of hospitality and restaurants will continue to serge and transform with the assistance of technology and we only hope the idea that you proceed to educate yourselves with the substance you gathered here. We as a species will never finish learning, which is a miraculous trait to have in our DNA.

Keywords
restaurant of the future, hospitality, technology, trends

Table of contents

1 Introduction

1.1 Research Background

According to Kazantzakis (1946, 62) “The world of the future is not born yet, it is elusive, fluid, made of the light from which dreams are woven, it is a cloud buffeted by violent winds – love, hate, imagination, luck, God”. The future is an elaborate and incredulous notion that not one person or industry has the ability to predict, however the last decades have seen much anticipation in forecast, projection and speculation as to what may come about in the following years. The below paragraphs are based on the idea that the hospitality industry and specifically the restaurant sectors are going to have a vastly different landscape than they do now.

The restaurant and hospitality industry have been moving towards and linked to technological and digital advancements for decades and are seeking to become even more personalized, connected, responsive and tailored to the individual experience. In these last decades, we have seen major swings through the incorporation of not only technology but also scientific growth. During these years, the traditional format or formula allowed computers and intranets to establish a presence to assist in controlling systems compatibility with human direction.

What we see, how we perceive and how we spend our time in restaurants will look much different in the coming years. The way we dine, order, access and eat our food and respond by the year 2025 is going to nothing short of spectacular. So not only will the identity and DNA of restaurants change, but the frameworks and emotions will take on a whole new design as well.

Now and moving forward, what may seem like a sci-fi movie or a relative act of fiction will become our reality. Encountering the use of AI (artificial intelligence), Robotics, cloning, 3D Food imaging and processing, Block chain technology, digitally enhanced social interactions and cloud based storages devoid of the ardent hardware of the past. We may also see less human interaction within prominent roles, while the user experience (UX) growing substantially. You ask how this may be relevant to the future of restaurants and hospitality, then imagine entering a venue while blanketed and outfitted with augmented attire that notifies the restaurant of your presence with all your information categorized and sent to a primary database. Your likes, dislikes, health condition, present state of being- think, a loyalty system derived from a server utilizing big data and AI insurgence.

2025 will interface and access services from the palm of our hand, our clothing, while robotic and AI interaction will be more personalized to enhance our day-to-day lives. Tech-savvy companies are already on-board already using mobile-internet technologies, big data analytics, algorithms and free-flowing smartphone applications/tablets to deliver infinite extensions from the host to the consumer.

The question now lies as to; what does the future hold for the industry of hospitality, in particularly restaurants. And, what is the next wave going to offer as intelligent and responsive technology? An even biggest question will be, how are we going to be defined by it all… Already we are seeing autonomous automobiles navigating the road with a recent successful test by the Coors Brewing Company launching their first unmanned logistical delivery across the state of Colorado. This will be setting the tone to influence unmanned delivery services from restaurants to homes.

Social media platforms and outlets are heavy indication for the pace we are moving forward. And as todays Millennials & iGens are sharing, delivering and interpreting information at a self-gratification speed is something we have not seen nor have been prepared for. Restaurants and hospitality departments utilizing the latest technology mediums are paving the way for the future of these future consumers. The future of hospitality and restaurants armed with emotional and empathetic listening techniques allows more consciousness for sustainability and transparency in the markets.

This thesis will establish a framework of observations on how the world of restaurants and the hospitality industry will look over the next decade. The notion is to establish an idea of what type of systems will be running our day-to-day operations, what will be the percentage of staff to robotics be, what will the logistical structure look like, in what way, will we be making use of technology driven agriculture and how will the that industry effect and advance our food growing activity. As stated previously listening and understanding will become a key to summing up the value of future endeavors.

We can already establish that a majority of restaurants are buying into technology and the future will be leaning towards more sophisticated realities but the real question is what will the physical existence permeate. What is every element of restaurants guest experience and how will that change? Managing customer expectations will take on a more experiential function.

The background of this work is a collaboration of thoughts, research, reading, experience, fundamentals, education, foresight and feelings we have identified with throughout the last 15 years of our lives, but primarily the last 5 years have become the most invigorating. The timing and many variables coming together plays in particular contrast to our profession lives, culminating with the dynamic path of education in Hospitality and Tourism at Haaga-Helia. By utilizing the knowledge obtained throughout these subsequent ventures, we seek to derive at future desired targets. These targets or goals are only sustainable by understanding how the future will appear over the next decade and how the perceptual context of technology intertwines with our lives to a greater extent.

As the writing becomes more exacting, the delivery of our focus will undoubtedly befit further evidence in securing abstract and qualitative views. Our passions and enthusiasm as you may assume are wildly essential to the scripting process, which has allowed us to form a distinct view on the question ahead. That question, “How will the future of hospitality and restaurants look by the year 2025”.

Focusing directly on Hospitality and Restaurants and indirectly on the general undertaking of technology permits an engaging solution to the coming decade. Now due to the enormous amount of speculation and enlightenment surrounding technology and its hand on the industry, the gathered research and documentation we received relied heavily on theories, forecasts, predictions and qualitative respondent assessment we have pieced together to define a formative future vision.

To expand upon the our own personal theoretical process, we have assessed that the last 2 decades of our industry experience and experimentation has permitted us to witness a lasting change and progress. This is vital to the work we are deliberating on to further ensure a subjective hypothesis that will determine at least some semblance that will objectify our position.

The question of “How will the future of hospitality and restaurants look by the year 2025” is not a straight forward estimation but our prognosis expresses the scaling of technology shall increase throughout the industry in a variety of aptitudes to distinguish the divisions of labour from prior generations.

In accepting that diminishing borders of culture, travel and accepting that change is underway, are of great importance to evaluate the future. It’s more than evident that we are presently anticipating the birth of new and exciting ideas to generate processes insuring sustainability, advancements in technology and progress in all sectors of the

industry. And this will undoubtedly be achieved from the readily available information, experimentation and demonstrations carried out thus far.

To think how so much has changed so fast is almost beyond our capacity. A strong example of a major industrial shift may be seen in farming and agriculture, where at one point this painstaking work was viewed as a burden, has now become in fact a science, reducing the labour of man to basically oversee the work of complex machines, processing units and automated systems.

As per the above thoughts on experimentation and anticipation, focus on the monetary scope of the industry has a dimension of unlimited proportion. Restaurants over the next decade will become more streamlined, with less waste in all areas of the business. Labour will decrease, as the actual handling of the food will be more machine driven. Waste will become irrelevant as agriculture will be harvested within cities limits and skyscrapers with produce vertical farming ventures.

1.2 Research Question, Aims and Issues

The reoccurring question influencing this research is something simple, yet with the constantly changing climate of technology, business, politics, economies and hospitality in general, the lines are blurred as to where we are going and how fast we will be traveling there. There is a plethora of information surrounding the industry of restaurants expressing much talk of back-end, front-end and changes to promote the future of hospitality.

Depending on your source and the direction from which they lean in terms of the pace of technology, determining a clear and concise depiction of the industries technology integration will be difficult to comprehend. Forecasting our way into the future will rely heavily on the consumer demands and fluidity of function. The questions that industry professionals have strived to answer in the shape of what is to come deal with so many intricacies that there is no real quantitative or qualitative result and that's actually what makes this work so alluring and attractive to us.

With the above, we have an internal aim for why we chose this topic of research as well as the timeline of 2025 in which the forecast should be concluded. For our own personal approach and career focus, it was felt that the coming decade is the timeframe where we leave the daily work routines of building brands and restaurants, which is extremely demanding and rigorous. At this juncture we seek to focus our attention on consulting and teaching others how to architect through brand identification, creating their own

establishments and working their tails off achieve their goals with our professional experience to guide them.

So now we look for the answers to the following question; **What will the future of Hospitality and Restaurants look like in the coming decade (year 2025)**. The issues coming up throughout are, what are the aims and focus on restaurants, what are the models that will be used to execute the restaurants of the future and how futuristic will they be. Then the issues brought forward are how will we become more sustainable on a global scale. Will we continue to destroy rainforests, emit methane gasses and slaughter animals without having the least bit of consequence?

1.3 Justification for the Research

The definitions adopted by researchers are often seen as a relationship between the research and the study. As the justification of our research pertains to the environment of the hospitality and restaurant industry we look to scour though enough information that we can an end goal that delivers the correct definitions that should discern between the idea, the findings and the results. For this thesis, and with the work we have established, we merely assume that our conclusion will be justified by the many parameters and examples used to substantiate relevant data. Based not only on a decisive examination of the industries current state dealing with technology integration, the research and provided is undoubtedly subjective to the exactness of the future. However with particular facts, figures statistics and knowledge of the present forecasts, we feel our documentation will hold true to a theoretical model.

Our rationalization for this research is based on a commitment to restaurants and the complete understanding that potential changes will be dealt with over the coming decade and preparation must be in order. We will inevitably be going into battle on a new frontier within the industry as we progress into a high-tech, applied reality. These changes are not going to be minor alterations that might be viewed as variables to mirror, rather significant modifications and extremities that will shape the rest of our lives. As we have seen and derived at, the scope of the next decade could be limitless.

The relevance of "**what is the future of hospitality with regards to integration of technology in restaurants for the year 2025**" has much more of an undertaking than we could have ever realized a decade ago. To look at the variety of organizations collecting data and classifying this information to distinguish the relevance of technology and how it will support this industry is daunting to say the least. The definitive works regarding hospitality in general has been somewhat mute, considering it generates trillions of dollars

a year. Research and analysis suggests that all trends and patterns will align to a vast shift where technology forms the majority of industry and restaurants.

The considerable task in strategically setting up a properly diverse restaurant with the invariable technology integration shall be a commitment many are not ready to undertake, which makes this research a rationale prospect to evaluate. There are definitely undeniable questions out there to also ask about the future of restaurants such as: Will chefs become obsolete in a world defined by robotics? Will consumers continue to visit restaurants? Will robots serve us or artificial intelligence and how will VR play into the action plan? There is tremendous acceleration and pressures on the industry to move forward and adapt to new technologies and we have to perceive that these changes will happen gradually to allow for new and exciting discovery.

1.4 Research Methodology in Brief

While a number of graduate dissertations are reliant on solving a problem from a broad field of study, we felt more dependent on delivering a forecasted approach to determine how the future of the hospitality, specifically restaurants, will change over the course of the next decade. To undertake this process we explored many methods that would be able to reference the research and assess the correct flow of information. Grasping upon the field of study and the developmental process we finally concluded on the idea to combining a qualitative and quantitative method to best represent our work.

Utilizing a qualitative research review known as Delphi Analysis and assistance by the quantitative research method of a Research Onion, we will guide our methodology work to answer the question, "**What will the future of Hospitality and Restaurants look like in the coming decade (year 2025)"**.

The use of Delphi Analysis, due to its nature of identifying answers to varying forecast questions suits the needs to our work thoroughly as Delphi is based on the principle that forecasts (or decisions) from a structured group of individuals are more accurate than those from unstructured groups.

Defining this theoretical framework and developing a justified series of research allowed us a competence to understanding and following the relationship and mastery of the works. The pursuance of substantiated truths to determine functions, roles and acceptance in an undetermined industrial future is a guiding alternative prevalent in this procedure.

Since the re-occurring question of how restaurants will look in the future cannot be answered in the mere yes or no context, the examination process should not be addressing a hypothesis but an understanding and examination of ideological results. Our inclination was to design an in-depth questionnaire allowing drawing of data that will analyze professional views and perspective. As Leedy, P. (1989), notes in his thorough introduction to writing research problems, 'The statement of the research problem must imply that, for the resolution of the problem, thinking on the part of the researcher will be required'. Sometimes there may be sub-problems to the major research problem. And with that being said the thought of a research-based problem was not the direction we looked to follow, since we were required the consensus of others to surrender their views and ideas to the questions.

With the distinct nature pertaining to the future of restaurants and the hospitality industry, the qualitative data collection method will analyze and reflect different thoughts from professionals who will be considering changes they will have to commit and adapt to in the coming decade. This research is not only a fair assessment of information, but also rather a social experiment to determine exacting advice and data that could actually lead to further discovery.

1.5 Thesis Structure

Our writing is delivered through a foundation of information pertaining to three significant sectors whose focus is derived from a host of definitive structures. Restaurants, Technology and the Hospitality industry over the next decade, will have a fundamental shift from traditional standards and endure a growth that has never been seen before. This is going to be due in part to the work that individuals (entrepreneurs), corporations and start-ups are pining towards at a rapid pace.

The classical thesis utilizes a number of variable requirements to submit a resourcefully written piece of literature with features delivering to assist the dissertation process. Relying heavily on the research, development, content and structural models, allows for our dependence on many aspects of the empirical studies and foresight to which will come.

Our knowledge of the industry, the inner workings of restaurants, professional education and hands-on execution gives us a strong bearing of the industry as a whole will suffer us the tools needed to address many issues that will arise in the research approach. Presenting of a solid dissertation requires a lengthy procedure in building out a

classification model of work and requires distinct sections analyzing information, data and various disciplines.

Below is an informative review of how our work has been organized to deliver the most relevant conclusion related to the topic and its structural insight. The framework is based off the Principles of Qualitative Research that are defined in many educational studies. According to “Wikipedia” the following definitions describe the building blocks to the qualitative research analysis:

- *Conceptual Framework*- an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. A strong conceptual framework captures something real and does this in a way that is easy to remember and apply.
  https://en.wikipedia.org/wiki/Conceptual_framework

- *Literature review*- is a text, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic.
  https://en.wikipedia.org/wiki/Literature_review

- *Research Methodology*- is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge.
  https://en.wikipedia.org/wiki/Methodology

- *Findings and Analysis*- is the process of breaking a complex topic or substance into smaller parts in order to gain a better understanding of it.
  https://en.wikipedia.org/wiki/Cognitive_psychology

- *Conclusion*- the last main division of a discourse, usually containing a summing up of the points and a statement of opinion or decisions reached.
  https://en.wikipedia.org/wiki/Thesis

2 Theoretical Framework

For the section of theoretical framework, we pursue a goal of building on concepts pivotal to a theoretic discussion and identifying with the question "**What will the future of Hospitality and Restaurants look like in the coming decade (year 2025)"**. The information chronicled and described here will lend itself as a set of building blocks and research to conclude with the foretasted question, that will work cohesively with respondent responses in later chapters.

Assessing various interpretations and examples of history, modern day and the changes along the way favors us in defining a glimpse of what the future may hold. It also enables us to acknowledge that we are on a path to an age of integration whose developing processes utilize technologies to make industries run in ways we have never seen before.

Something else for us to consider is tremendous acceleration changes and pressures on the industry to move forward and adapt to new technologies. "In 20k robots can flip a burger better than a human, I know this sounds heartless but that's how Darwin would have wanted it"- Kyle O'Brian; owner/ operation Hotel Chantelle, New York, New York, USA …

2.1 Key Concepts

A concept is defined as an abstract or generic idea generalized from particular instances. Using this as a basis for our work in this section we will be introducing various subjects, phrases, genres and time periods to promote our theoretic premise. In evaluating and identifying a theme of the work, we view the key concept as the main idea and reference point to the question of "**What will the future of Hospitality and Restaurants look like in the coming decade (year 2025)"**. There is a definitive relationship between the concepts and theoretic framework permitting certain compositions to manifest accordingly and this will be established fully. In terms of modern hospitality concepts, restaurants have 2 types of features that have allowed them to repeat the same auspicious existence throughout their days. The first is the fast-casual, which is a name that has only been adopted recently- it involves payment up front and then you eat. The other is you sit down eat and pay after your meal. Both work as extremely strong models for ROI and are an extension of your brand you can easily build and draw a full concept around. The only real difference is the how you want to staff your establishment and whatever space requirements set you apart.

2.1.1 Restaurant

The definition to best describe a restaurant or eatery is a business, which prepares and serves food and drinks to customers in exchange for monetary payment. The purchase and consumption of meals has been predominantly focused for on-premise dinning, however off-premise, such as take-out and delivery that have become more prevalent in the last century help generate heavy revenue streams and this market segment has enormous growth potential for the industry.

The general notion of serving meals in years past (before the turn of the 20th century) was regarded for affluent and distinguished groups, however that has changed significantly throughout time, leading the way to different classifications and factors to determine types of restaurants. The styles range from fast food, cafeteria, formal, semi-formal and banquet dinning. There are diners for breakfast, lunch or dinner. Pricing of these establishments also differs by the classification of the venue and the ranging from stars of 1-5).

Within these categories, the restaurant industry is one of the true hierarchal models for employment, as a system of management is put in place to control all areas of the venture keeping quality and control a sensitive matter. Restaurant spending also provides a tremendous boost to the economy and seems to thrive no matter the state of affairs for other industries. The creation of jobs through food consumption is a robust undertaking, due to the many factors that govern and provide support to “put food on the table”.

Restaurants enjoy so many variables that play into the modern day social structure. From a place to dine with friends and family, to prospect business, or just a place to enjoy time away with a meal and a book. Whatever your preference, a restaurant serves its personal allure.

2.1.2 Future

The late management guru Peter Drucker when asked how he made such accurate predictions said, “I don’t forecast. I look out the window and identify what’s visible but not yet seen”. The future is a period of time following the moment. Because we are unsure as to what will happen in the next moment due to any number of variables, the future is a pretty uncertain scenario. However, there is significant data prospecting the growth in sectors of technology for security, health and wellness, hospitality, DNA sequencing, mobile applications, VR, AI and robotics that allow for strong indications of where we are progressing.

Where we will be progressing in the hospitality and restaurant industry in particular the future looks to establish a new face to how food is prepared and consumers dine. There is countless amount of work going into this area that is not as noticeable as the drones, robotics and driverless automobiles taking up the headlines today. But this is not to say that the future work towards hospitality and restaurants is any less significant.

2.1.3 Change

Change is inevitable, change is cumulative, change is a variable that we need to prepare for as it will assist in development and integration. Change is the act of making something different. Change is driven by everything around us and appropriately makes something look entirely different than its initial intention. Not every has to be a scalable dynamic solution, as change takes place in many forms, and we have undergone many in the last thousands of years. The most notable and historical of these times or eras may be defined by the developments in learning or education, development in manufacturing, development in industry, understanding of relationships, politics, religion, globalization, governments and advancement in this new world of technology.

The era's of our existence:

- Hunter gather- lasted several million years
- Agricultural age lasted several thousand years
- Industrial age lasted a couple centuries
- Information age has lasted a few decades

https://channels.theinnovationenterprise.com/articles/ai-and-cognitive-marketing-the-new-and-exciting-frontier

It's not a coincidence that the change happening throughout these eras, progress seems to take shorter periods to develop. This has to do with our advancement in learning, our ability to become more aware and our decision making over those thousands of years.

Invariably leveraging the right technology to implement varying degrees of customer needs will become so in-depth that embracing the diverse needs of the consumer as opposed to alienating the diverse needs of customer base is an area of change, which will progress and produce key initiatives throughout the restaurant industry. Think of the undergoing change in menus and other kinds of ingredients that would assist in all the various dietary needs of individuals.

2.1.4 Technology

This word was not known at one point during some historical accounts; however, in today's world it is one of the most spoken, researched and defined words around the globe. Technology is the application of scientific knowledge used for practical purposes and over the years has assisted in moving the process of industry and life, which does not look to slow down at anytime in the immediate future. Inherently some feel that technology is moving so fast, that reliable predictions may not be readily forecasted over the coming years and ensuring future events is almost impossible to harness. Just take a look back as we have passed the 241'st year of Americas Independence, (July 4th 2017) and look back at hottest trend in technology of 1776, we find a piece of Quill pen and Ink to sign the Declaration of Independence and a Black Powder Musket to hunt for food protect the new governed lands. That is merely a joke to promote what technology looked like back then, however the real technical assets of that day involved the installation of a steam-blowing engine in an iron-working furnace.

When observing modern day technology what springs to mind immediately is the use of computer systems that are completely integrated into our everyday lives. So how will the future provide more for us? Studies now point to the use of commutated intelligence to interpret not only our what we are doing in daily lives but also what we will be doing before it's done. This arrival of information will deliver us with an integrated system of calculated coexistence. From Big Data to the delivery of AI, VR Augmentation and the acceleration of the overall Internet of Things, the stakes and competition are becoming extremely high to derive at a future where the digital footprint will be as apparent as a carbon footprint.

These are areas of exponential growth that by 2025 trends and megatrends will develop our world to look much different than it does now. So much in fact that a megatrend of today, which may be something as significant as drone delivery services, will look as commonplace as a teenager dropping off a pizza after school. A recent wired report suggests that by the year 2021, autonomous automobiles will navigate the roads, which will heavily influence society.

To go a step further, lets evaluate Virtual Reality at this moment. During the past couple of years AR hardware has gone through various changes and upgrades in its development to make user interaction more productive and singular. Most handheld units produced up to this point by the major players utilize cell phones attached to the goggles, but even in the past couple weeks, the newest technology is allowing for stand alone units

that require only the goggles. This is a major breakthrough moving forward just in VR, so we can only invasion what will be next.

2.1.5 Trends

A trend is a general direction in which something is developing or changing. This can last for a number of years but will not reach more than decade. You may have trends that rise and assist in the significant positive changes to society such as the use of technology or as some trends- predict fall in industry or growth. The trends we are watching unfold throughout all industries now are the broader use of technology, mobile access and the ability to pay for purchases at the swipe of a button. There are also smaller trends that have we have seen dominating the food market, such on-demand shopping that delivers food and ingredients so you may create a restaurant style meal in the comfort of your own home. This is an example of convenience and the ease at which we can have everything we want anytime. And again this is all executed by the touch of your mobile applications.

Trend focus in restaurants over the last decade has recognized restaurants leaving the security of brick and mortar locations for the mobile food truck market. This talk could also be under the headlines of entrepreneurships, however it has become so globally driven and surpassed the “fad” title that it deserves to be recognized as a trend. For our purposes of forecasting the ‘”future of restaurants” we feel there is a strong case suggesting that food trucks will become more technical and advanced over the coming decade. Research points to the development of the day where a “truck” may even take flight to become a “flying restaurant”.

These areas are growing at an exponential rate and by 2025 the trends and megatrends we see now will be commonplace in a world that will look significantly different than it does now. So much in fact that the task of coding will seem more of a mundane and labour-like position, rather than the sexy bearded start-up feeling it has now.

We also have to look at trends as something that starts slow and steady- a small trickle of water can eventually carves out a river. To put that into context lets take define “vertical farming” a concept of energy and farming sustainability voiced throughout this study. This is a concept that started as a thought of in-house farming and has now become a global trend to provide a cheap and clean power source.

2.1.6 Megatrends

Megatrends are large, transformative global forces that impact everyone on the planet. There are basically six divisions of labour that define megatrends and how they will forecast our future. These far-reaching impacts are business, society, culture, economies, labour forces and individuals. While each of the exist and stands on its own, there is clear interactivity between all and them and today are all influenced by technology. So in essence, today's megatrends are defined and run by technology. With that, we can expect much from megatrends in the future to affect the course of the hospitality industry and restaurants.

The information concerning Megatrends from academic, professional- and for our research, hospitality communities, point to a future driven by technologies engineering, objects, gadgets, software's and visions that are inherently much different than today.

These megatrends are stimulating economies and contributing to many factors and facets of the world. Statistics attest, the level of speed at which we are moving forward is something of an anomaly, as it took close to a century for the industrial revolution to change and move the world forward. By today's standards the industrial revolution seemed so far behind us that it almost didn't exist, however without those developments we would not be where we are today. Technological advancements are rapidly boosting all applications of manufacturing, production, distribution and every other area of integration that we can conjure at this time. It is hard to imagine that up until around 1980 we were using pen to paper for spreadsheets (an era that spanned almost 100 years prior) until Microsoft Excel came along and changed the way organizations run their businesses.

2.1.7 Focus on Trends and Megatrends

It seems as everyday a new breakthrough in technology takes place, from algorithms, faster processing capability, rolling out of a new mobile platform, or advancements in gaming. There have been tremendous shifts to application-based software allowing for faster, more comprehensive, efficient transactions using a host of technology. And to think we haven't even gotten into the Artificial Intelligence, machine based learning, VR (virtual reality) and other technological advancements that will be delivered in all areas of industry, we are only scratching the surface here.

If we are to focus on the impact Trends and Megatrends will dispatch over the coming decade we must first establish the scope and areas they will be covering. An executive

study delivered by Zeev Efrat for the company Frost & Sullivan states visionary thinking can be conclude that further development in; urbanization, social, economic, technology, energy and environment, and infrastructure development will be the broad growth and evolution sectors. In theses areas we will see Smart Cities and Factories, More empowerment to women, the generational gaps will diminish with education becoming more freely available, development of an almost obsolete carbon output, wireless intelligence making the way for satellite technology, robotics, VR, AI, cloud computing, cloud, e-mobility, data mining, global power generation, hyper loop travel and of course space journeys.

The Trends and Megatrends we seek to identify in restaurants and hospitality are based primarily on technology and what will this do to influence the industries future, however, and as it may seem a bit cliché to express that eating healthier and cleaner is a trend or megatrend but the enormous growth of the health and wellness market suggests just this.

As we are seeing, the expansion of technology interaction in restaurants is growing rapidly in all areas of the business. It started years ago with the automation and use of machinery to assist in food production and has gone as far as creating spaces that trigger emotion, as would be the case in studies done at Disneyland amusement parks. Here they spread the focus of sensory marketing to raise our sensation; smells, tastes, look, feel, they are all their to get us through the door and keep us there spending as much as possible. The question now is how will technology deliver in the future of sensory marketing.

An example project such as “The Box” organized by Haaga-Helia might just be the answer to the above question as it gives distinction to the emotional and sensatory progress that is leading us forward. The Box, which is a cross-disciplinary project developing sensory-stimulating technologies for service design, marketing and product development, aims to help investors and operators in the hospitality and tourism industries improve service experiences and increase customer value. This is just one of many interpretations allowing the restaurant industry to connect us with the future.

2.2 Restaurant History and Business

Many years ago, before the turn of the 1900’s the hospitality industry looked surprisingly different than today’s hotels and restaurants sitting on every metropolitan city corner waiting for the masses to dine, stay and spend. These Inns as they were called served food and drink in a common dining room and lodged weary travellers. A horse would be staged in the barn and people would head to the restaurant and eat what had been

prepared from the days agricultural and livestock yield (this would be the traditional course of what we now call ‘farm to table’).

This of course paved the way for restaurants and hotels expanding their horizons as the world became more manageable, more economically diverse and more individuals started to recognize the idea of dining and eating a variety of foods from countries and cultures the world over. Now what we see is a culture defined by celebrity chefs, fusion cooking trends, hotel resorts, fast food and the start to a technological boom within an industry that will be re-defined itself for years to come.

For a restaurant to be ahead of its time and show its technological advanced would have taken a website 10 years ago and a mobile app 4 years ago. Now we are moving to an arrangement of entertainment and platforms that will express how restaurants are received. There are many forces shaping the future of the restaurant business and none more prevalent than that of technology integration. So here is when our question is asked- How will restaurants look in the next decade in 2025? How will we be paying at restaurants, how will food be prepared and served, will robots and AI take over the labour of humans, where will the ingredients come from and how will logistics play a role.

If the belief that restaurant will become too automated, human less and void of atmosphere, we are not being forward thinkers. The future trends of restaurants and the business as a whole are focused on delivering more efficient, sustainable and customized meals to consumers. Re-thinking the way we dine is a crucial step towards what is ahead as trends and forecasts are pointing to amazing new occurrences for the future. This holds true in many ways, due to the fact that we are already able to grasp vast shift towards the technological front and all that the future holds.

One area that we should keep in mind throughout this process of anticipation and forecasting is cost. Technologists have consistently underestimated the complexity and cost of new electronics equipment and integration, so we must be diligent in our working models.

2.2.1 Agriculture

Farming has always been an intricate part of our cultural heritage from the dawn of time and with this has come a number of historical occurrences, accounts and incidents, shaping the world. The most important aspect to acknowledge is that humans need food to survive. Whether it is fruits, vegetables or animals, our bodies collect nutrients from the previous and sustaining ourselves is reflected upon how and where we receive these

provisions. For this reason, the section of agriculture will evaluate several areas of discussion to determine the significant course it will be taking for us in the future. This includes but is not limited to focusing on history, growth and future technology and economics.

Agricultural development dates back thousands of years and has derived through countless years of industrial productivity. The most remedial of which started with men planting rice and grains early on and cropping these fertile grounds by hand. This lead to the use of animals to help plod the lands and as we became more advanced, the use of machinery later ensued.

To break down the idea of farming and agriculture you have to trace the roots to three separate but matched assignments in; harvesting crops (vegetables), raising livestock (animals) and distributing the yields to their final destinations and renderings (logistics and trade). And when you follow this back to its earliest history, not much has changed in terms of the work being done, only the procedure by which it is being completed, with an emphasis on more changes, techniques and methods to come.

Writing a whole thesis based on the ideologies, research, history, future, economics and politics relating to agriculture and farming as it pertains to our natural environment, could be achieved, we will keep this section brief and discuss how we see its use in the attainable future.

The process of farming and agriculture is evolving constantly with technological advancements but the time and energy put in is still an exhausting work. The idea of seeding the land, growing the crops, engineering the plants and domesticating the animals used to harvest the land and delivering all yields through various logistical locations is a good place for us to develop a concept on where the next 10 years are leading.

Over the coming years, the growing demand for sustainability in food, water and energy will be an essential piece to the world's issues. Agricultural spending will be inspired by technology operations to help feed the estimated 9.6 billion people that will be inhabiting the planet by the year 2050 (www.forbes.com/sites/federicoguerrini/2015/.../the-future-of-agriculture-smart-farming/)… Farming will assist in the design and shaping of how the future will look, feel and taste. And with this, will again evoke the natural progression and pulsating question of this thesis- How will Hospitality and Restaurant industry look in the next decade (year 2025).

Predictions vary with regards to whom and where will dominate the agricultural market depending on what side of the fence you are living. “Croplife’2, an industry leader in its field of research points to an article written by Eric Sfiligoj who suggests that by 2030 we will reach over 8 billion people on the planet and much of the economy will be targeted at China and India with the United States alongside them. With this the growing need for food, biotech crops will become more prevalent. So, either way you read into this, you know that the big countries are going after new advancements to secure technological growth.

Not to be overlooked is the relatively unforeseen demand for food and in particular fresh, sustainable and healthy food trends sweeping the nations. The food and agriculture (F&A) industry must increase production, availability and access to food significantly over the next ten years if it is to meet the demands of a larger, increasingly urban global population. Against a backdrop of uneven growth and soft commodity prices, this will require all in the Food & Agri industry to embrace the opportunity provided by data and technology according to 'Building a Smarter Food System', a report presented by Rabobank at Expo Milano 2015. The long-term idea is to have a much more sustainable path to the growing of biotech/engineered food with modified characteristics and smart food-waste management.

The science and practice of Agriculture is becoming a hot topic these days throughout the world with particular interest in cultivation soils through already developed and modified bio and genetic seed technologies. While reducing energy usage and utilizing more computerized machinery is another factor in discovery. The Farming and Agricultural industry will undoubtedly have a more prevalent effect on the global market place than it has had in previous years primarily due to the ease of travel and logistical movements these days.

Because the modern-day individual is more knowledgeable about what they are eating, how it is grown, where it has come from and its effects on the environment, they are becoming extremely aware of the technologies used in growing foods and want to live by the words- conservation, preservation and moderation. With this knowledge, many hospitality forums and restaurants have begun social awareness campaigns to help limit their carbon outputs, emissions and expand on sustainability, so their consumers can feel that they are attributing something to the welfare of the planet.

Focusing on these eco-friendly practices, leads us to areas such as solar panel energy systems, utilizing renewable energy sources and centering on more issues to achieve sustainability. Advancements in farming have become a globalized point of interest and these technologies have not only assisted in streamlining manufacturing and equipment, but also in the engineering and re-engineering of the soils, seeds, energy and nutrients used in plant growth.

For restaurants, sourcing their meats, vegetables, dairy and fish from reputable farms is crucial for the mindset of the consumer. For instance, Agricultural ventures such as “Vertical Farming” are quietly finding their way into buildings and skyscrapers throughout the world. Vertical farming is the growing of more crops on smaller plots of land by stacking them upwards. With an efficient working system, the yield can be extremely productive. These systems are already taking shape in places like Singapore, Chicago and Shanghai to name a few.

"A smarter food system is more productive, less wasteful, and more profitable," explains Fred van Heyningen, Global Head Food and Agri Banking at Rabobank. "It combines technology and data to change the way, as well as the speed, at which decisions are made and to optimize the use of resources to produce and deliver the food consumers need and where they need it."

An increasingly urban global population with changing consumption habits, is putting pressure on the global food system to adapt. By 2025, the United Nations Food and Agriculture Organization anticipates a 30% increase in global daily food demand. This will require a global food system that is more efficient, better able to meet consumer expectations, more profitable, and more resilient in the face of macro-economic pressures.

The research makes clear this is not achievable through a 'business as usual' approach. Instead, the combination of technology, big data, and more advanced algorithms represents a powerful opportunity to improve outcomes. Rabobank believes a smarter food system could offer productivity gains of at least 5% across a number of sub-sectors, supply chain stages and regions.

"Technology automates the way things happen, big data tells us what is happening, algorithms translate that data into decisions, adding speed and accuracy to food production, processing and distribution," explains Justin Sherrard, Global Strategist at Rabobank. "Success will depend on disruptive ideas that investors are willing to back. The

good news is that the move to a smarter system is already beginning to take shape." The research identifies technology use in farming, processing, and logistics, where tangible steps are already being made towards creating the industry of the future.

2.3 Restaurant Industry

Many years ago, before the turn of the 1900's the hospitality industry looked surprisingly different than today's hotels, restaurants, bodegas and fast food establishments sitting on every metropolitan city corner waiting for the masses to spend by dining, sitting or taking-away. These Inns as they were called served food and drink in a common dining room and lodged weary travelers. A horse would be staged in the barn and people would head to the restaurant and eat what had been prepared from the days agricultural and livestock yield (this would be the traditional course of what we now call "farm to table").

This of course paved the way for restaurants and hotels expanding their horizons as the world became more manageable, more economically diverse and more individuals started to recognize the idea of dining and eating a variety of foods from countries and cultures the world over. Now what we see is a culture defined by celebrity chefs, fusion cooking trends, hotel resorts, fast food and the start to a technological boom within an industry that will be re-defined itself for years to come.

There are many forces shaping the future of the restaurant business and none more prevalent than that of technology integration. So here is when our question is asked-How will restaurants look in the next decade in 2025? How will we be paying at restaurants, how will food be prepared and served, will robots and AI take over the labour of humans, where will the ingredients come from and how will logistics play a role. Automation has long been a factor in the hospitality industry but mainly on production lines, in safeguarding employees and expanding workloads. However, in the next decade advancements in technology and mechanization will allow for innovation in artificial intelligence, machine learning, more sophisticated processing power and a larger impact of robotic integration.

If the belief that restaurant will become too automated, human less and void of atmosphere, we are not being forward thinkers. The future trends of restaurants and the business as a whole are focused on delivering more efficient, sustainable and customized meals to consumers. Re-thinking the way we dine is a crucial step towards what is ahead as trends and forecasts are pointing to amazing new occurrences for the future. This holds true in many ways, due to the fact that we are already able to grasp vast shift towards the technological front.

Already there are models being run now to extract exactness in the ordering systems- case in point would be 'Pizza Hut's Chaotic Moon Studios Interactive Concept Table' that allows the guest to make their order on the flat screen of their table. No waiter, no fuss. Just a quick click and your pizza is brought to you by the cook. What this says for the career bartender, cook, server or waiter is that they better have a back-up plan, as their positions will be less in demand, as technology will streamline many of these posts.

Consumers are focusing on what they are eating, how much they are eating and what they are actually eating, which puts tremendous strain on the food supply chain. Companies that produce and distribute food are under pressure to deliver on more sustainable sources that will be consumed. This is actually a great thing for our health and wellbeing as we are starting to live a life more focused on nutrition, fresh and local. It is felt that the buying and consuming of food will look much different in than it does now with the introduction of various in-house farming techniques.

2.4 Rise of Entrepreneurship

The next generation of job seekers won't necessarily be career or professionally oriented in the traditional sense. Today's youth have become more business savvy and have staked their claim to create a more fluid technological future, without all the bells and whistles of joining companies that will give them enumerable benefits as the employee tries to climb a insurmountable latter to success. Their skillsets will be measured more towards a dedicated skill and achieving an end goal that will enable them to navigate their future.

Entrepreneurship is the new working model for the modern world in business ventures. The age for brilliant engineers, designers, developers, programmers and concepts is on the rise and has developed a cultural sense of existence. This is revealing a steady decline in higher traditional educational formats.

If we look at the old ideology of free market sustainability we are left with the following type of 80's and 90's style of innovation. The significance in adopting strong management procedures in change, creativity and innovation allows for a proactive stance to achieve sustainability and implementation in the mainstream. Searching for new ways to sustain, regain or improve operational efficiencies leads the way to expanding capabilities in todays rapidly growing social commerce environment. This attributes to further initiation within the free market. The process of creativity, innovation and change involves people in

the generation and the translation of novel ideas into new products/services and the movement over time from current ways of doing things to the new ways of working.

As much as business and entrepreneurship has been around for centuries, the tech culture seems to have cracked the code in identifying ways to secure funds and capital with relative ease from varying entities, unlike the traditional forms of bank loans and borrowing from family and friends. Today's start-up friendly culture looks to angel investors, crowd funding and from already established firms and tech firms to buy up their foresighted creations.

Working with new exciting ideas is a contagious energy amplified when technology is moving at the rate of speed that it is currently surging and shaping the landscape of the global marketplace. This rise is insuring a massive growth rate over the coming years and is expanding exponentially. The rapid-growth of economies and the furthering of technologies emulates the necessity to drive innovation and opportunities and set the stage for young, hungry and ambitious entrepreneurs to expand their web and increase focus on start-up strategies.

Start-ups as a term, has found its way into the modern day business vocabulary. Like so many other words, concepts and definitions that have entered into our society, this one the ideas and practices behind start-ups is quite descriptive. In its purest form, a start-up is a new business with a base of under 40 employees, that seeks to raises capital from various outside funds and investments to support and sustain its growth. This phenomenon originated in many ways from individuals becoming more attuned to the demand for a more harmonious, efficient and sustainable way of providing, while the markets have become primed to believe in whatever ideas are being thrown their way. As an example, the thought to just "open a restaurant" has now forged the idea to build a sustainable, deliverable and inventive investment that not only weighs upon the creation of cuisines and meals, but on a new engineering of the whole industry. These start-ups comply with factors of economics, logistics, food engineering, augmentation, technology and agriculture, to name a few. To be more blunt- the modern day entrepreneur are savvier, due to the use of technology and having everything more readily available.

For the future of restaurants, the platforms running the overall business seem to cater every need and this means a lot to the consumer.

2.4.1 Global Marketplace

When evaluating the global marketplace and defining its conceptual framework we look at the area of standardization where the goods and services are traded within a market of participants. The overall integration of more technology will assist the industry of hospitality and restaurants to better serve its customer base by growing their brand and initiate a stronger portfolio. We have an underlying question in determining how we will meet increased productivity over the coming decade. And this will be done with a more standardized marketing approach enacted through more intrusive mobile applications, better communication initiatives and a more the look to establishing a more sustainable existence. Intrusive being the optimum word, not in a negative connotation, but in a more encompassed framework.

Its hare to dictate what the future holds however, at the whiplash-inducing pace of our current existence the globalization of technology is helping shape the future of industries around the world. The key players and the brightest minds of; China, United States, India and the other areas of Asia are deciphering codes to deliver accessibility that we never thought possible. Already we are seeing the use of drones, automated automobiles and unmanned logistical outlets shaping the future of industries and the race between these ‘super-countries’ is only going to heat up over as the stakes become greater. It is almost like the race to the moon that was fought between the lines of the United States and Russia.

The development of technologies and the growth our society and societies has undertaken during this last decade alone is changing the global outlook and market. The trends ascending are amending the way we focus on ‘everything’. In the coming years the ease to accessing life-altering progress will only be a click, look or touch away. If we want to study a term that will someday be thrown around as a normal buzz word- that would be ‘cyber-enhancement’.

The following is a list of breakthroughs upon us from a 2017 MIT Technology review:

1. Reversing Paralysis. "Scientists are making remarkable progress at using brain implants to restore the freedom of movement that spinal cord injuries take away."
2. Self-Driving Trucks. "Tractor-trailers without a human at the wheel will soon barrel onto highways near you. What will this mean for the nation's 1.7 million truck drivers?"

3. Paying with Your Face. "Face-detecting systems in China now authorize payments, provide access to facilities, and track down criminals. Will other countries follow?"
4. Practical Quantum Computers. "Advances at Google, Intel, and several research groups indicate that computers with previously unimaginable power are finally within reach."
5. The 360-Degree Selfie. "Inexpensive cameras that make spherical images are opening a new era in photography and changing the way people share stories."
6. Hot Solar Cells. "By converting heat to focused beams of light, a new solar device could create cheap and continuous power."
7. Gene Therapy 2.0. "Scientists have solved fundamental problems that were holding back cures for rare hereditary disorders. Next we'll see if the same approach can take on cancer, heart disease, and other common illnesses."
8. The Cell Atlas. "Biology's next mega-project will find out what we're really made of."
9. Botnets of Things. "The relentless push to add connectivity to home gadgets is creating dangerous side effects that figure to get even worse."
10. Reinforcement Learning: "By experimenting, computers are figuring out how to do things that no programmer could teach them." https://researchstash.com/2017/05/02/top-10-stem-breakthrough-technologies-of-2017-mit-technology-review/

This is a presence that is allowing hospitality and restaurants the ability to streamline in respondent areas such as logistics, agriculture, sustainability, transport and distribution and service. As stated earlier with regards to drones, it is only going to be a matter of time before a company such as Amazon or Google (examples) will have the foresight to deliver foods with these entities at a super-fast rate.

Another interesting article called “The Health of the Hospitality Industry: 2016 & Beyond” that involves precedence with how the hospitality industry looks at this very moment and where it is going comes from a site called “ihire.com”. Here is the article in full and its findings.

2.4.2 Sustainability of the Restaurants and Planet

An article we found in an online publication called starchefs.com featured a article dealing with current trends of sustainability titled “30 ways (and days) to a more sustainability restaurant”. It states the following; “Sustainability is not just a philosophy about food – it’s about people, attitudes, communities and lifestyles”.

This could not be truer to us, as we follow a strict code of values in our work, reflected in how we live our lives and pursue our work. Over the last two years we redefined our process of thinking to coincide with a more continued existence.

The path to having an economically viable, sustainable and maintainable restaurant facility is something owners, operators and facilities need to be conscious of, to a greater extent. There is actually one notion that the restaurant industry is crisis, as the gap between the consumer's expectations and the industries are heavily skewed. But what must be agreed up over the coming years are the radical changes restaurants are processing in streamlining all areas of production that will in turn assist in a more sustainable future. This is moving forward though, "going" paperless with digital menus, eliminating cash payments, using e-receipts (emailed), procuring organic meats, fish, vegetables, dairy and poultry while making seasonal menus, finding organic cleaning supplies, portion controlling (lowering portion sizes), creating less waste and do whatever is needed to behave with a more global mind set.

Figures point to the growth of our population estimated at 9 plus billion in the coming decades and everyone needs to do their part in keeping up to preserve the planet. With that said, the intentions of industries to start putting structures in place to save the environment is crucial to all our well-being. An end needs to be put to destruction of the rainforests, a reduction of waste and pollution, reduced methane gasses and an overall lowering of our carbon output.

In the before-spoken article, a list of 30 ideas for "going globally sustainable" in the restaurant. The relevance to this allows us to argue that there really is a need to begin moving to a more ethically responsive thought process. We that are in the industry are the pioneers of the future and must act such as:

1. Go local. It's not possible for everyone all the time. But when it *is* possible, support your local farmers.

2. Take your team to visit a farmer – it's a good exercise in remembering that each piece of food has a story, and a person behind it. (And you can bring back extra produce for a special family meal.)

3. Know your seafood. The criteria for evaluating the sustainability of seafood differ from those for agriculture. Inform yourself using resources like Monterey Bay Aquarium's Seafood Watch Guide, and demand that your purveyors are informed

too. If they can't tell you where a fish is from and how and when it was caught, you probably don't want to be serving it.

4. Not all bottled water is created equal – some companies are working to reduce and offset their carbon footprint through a number of innovative measures. And some of the biggest names in the restaurant world (like *The French Laundry*)are moving away from water bottled out of house. In-house filtration systems offer a number of options – including in-house sparkling water!

5. Ditch the Styrofoam – replace cooks' drinking cups with reusable plastic ones, and replace Styrofoam take-out containers with containers made of recycled paper. BioPac packaging is one option.

6. Support organic, biodynamic viniculture. There are incredible, top-rating biodynamic or organic wines from around the world.

7. Support organic bar products. All-natural and organic spirits, beers, and mixers are growing in popularity and availability.

8. Even your kitchen and bar mats can be responsible: Waterhog's EcoLine is made from 100% recycled PET post-consumer recycled fiber reclaimed from drink bottles and recycled tires.

9. Choose 1 day per quarter, or 1 per month, to devote a morning to community service: send staff to a soup kitchen, bring local kids into the kitchen, teach the kitchen staff of the local elementary school a few tricks, or spend a few hours working in the sun at a community garden.

10. The kitchen equipment of the future is green! Major equipment producers, like Hobart and Unified Brands, are developing special initiatives to investigate and develop greener, cleaner, energy-smart machines (that also save you money in the long run).

11. Shut down the computer and POS systems when you leave at night. When the computer system is on, the juice keeps flowing – shutting it down can save significant energy bill dollars over the course of a year.

12. Check the seals on your walk-in – if they're not kept clean and tight, warm air can seep in, making the fridge work harder to stay cool.

13. Compact fluorescent bulbs use 75% less energy than incandescent bulbs – and CFLs last 10 times longer, giving them the environmental *and* economic advantage.

14. Consider wind power. Ask your energy provider about options – ConEd, for example, offers a wind power option. Though it tends to run 10% higher than regular energy, it's an incentive to bring the bill down by implementing other energy-saving techniques.

15. Look into solar thermal panels to heat your water. Solar Services, one of the oldest and biggest companies, will walk you through the process – from paperwork to tax credits. With the money saved on a water heater, the system will have paid for itself in 2-3 years.

16. Green your cleaning routine: trade astringent, non-biodegradable, potentially carcinogenic chemical kitchen cleaners for biodegradable, eco-safe products

17. Use non-toxic pest control – the options are increasing, and even some of the major companies have green options.

18. Consider purchasing locally-built furniture. See if there are any artisans in your state working with reclaimed wood (from trees that have fallen naturally because of storms or age).

19. Recycle your fryer oil – there are biofuel companies across the country that will pick it up and convert it.

20. Grow your own: consider a roof-top garden or interior/exterior window boxes for small plants and herbs. EarthBoxes are one low-maintenance solution.

21. Cut down on shipping materials – request that purveyors send goods with the least amount of packing materials possible. Request that Styrofoam packaging not be used.

22. Swap white toilet paper, c-folds, and restroom paper towels for products made of chlorine-free unbleached, recycled paper.

23. Need new toilets? There are a number of water saving options that save anywhere from ½ to over 1 gallon per flush. The old-fashioned brick technique is a good start too: place a brick in the tank of your toilet – the space that it takes up is water saved each time the toilet is flushed.

24. Compost garbage – even high-volume establishments can make this happen. Keep separate cans for all food-based waste, and dump it in a compost bin out back. A common misconception about compost is that it smells bad – not true!

25. Recycle! Be strict about kitchen and bar staff recycling glass and plastic receptacles. Recycle cardboard and wood boxes used for produce, and any newspapers or magazines sent to the restaurant.

26. Cut down on linens – tablecloths and napkins require a large amount of chemical cleaners, bleaches and starches. Stay away from white, if possible, and if it's not imperative, consider eliminating tablecloths all together. Go for soft cloth napkins, instead of starched.

27. Ice = water + energy. Don't waste it! Don't automatically refill ice bins – wait until they truly get low, and only add as much as you need to get through the crush. Ice is expensive to produce, both in terms of money and resources.

28. If you're a small restaurant or café, without huge needs or storage space, look into joining (or forming) a local co-op for purchasing green items. Cleaning supplies, paper products, etc. are all cheaper in bulk.

29. Educate yourself! From agricultural philosophy to the specifics of restaurant operations, the number of resources for green issues and practices is ever-growing. Pick up *The Omnivore's Dilemma* by Michael Pollan, the Green Restaurant Association's *Dining Green: A Guide to Creating Environmentally Sustainable Restaurants and Kitchens,* and *Sourcing Seafood, a Resource Guide for Chefs* by Seafood Choices Alliance.

30. Educate your staff! They need to know *why* you're doing what you're doing, so that they can spread the word – to the diners, and beyond!

Growth Market & Economics for Restaurants the United States

The hospitality industry has an extremely bright outlook in the US and beyond. The Bureau of Labor Statistics projects the addition of hundreds of thousands of job openings over the next decade as this sector continues to expand. Worldwide, the hospitality and leisure sector contributes approximately 10% of global GDP and the rise of numerous emerging markets herald continued growth for years to come. All of this combines to make this industry a very sensible career choice. However, there are a few trends and antiquated ideologies to keep an eye on. Most of this is all happening in the "now" and

who knows how many more decisions will be reflected on over the next decade but for now, here are six thoughts that could have a major impact over the coming decade.

1. Affordable Care Act affects how employers staff: To avoid paying health insurance, some hotel and restaurant owners have decided to hire more part-time workers rather than offering health insurance benefits to full-time employees. Furthermore, this legislation has increased emphasis on tracking hours for compliance purposes, which puts additional administrative costs on businesses.

2. Approaching baby boomer exodus: Approximately 9% of the hospitality workforce is approaching retirement age. This will open up a number of leadership roles and create around one million jobs that will need to be filled in the near future. As baby boomers are replaced by millennials, companies will need to adjust their management approaches to empower these workers and keep them engaged. Retaining talented staff members long term will require investments in training and proper incentives to provide a sense of ownership and reward top performers for their contributions. These two groups couldn't be farther apart from each other in the way they view life, work and management. Millennial have been brought up with technology, while the baby boomer generation has only be introduced to it in their golden years.

3. Changes in recruitment tactics: The employment market in general is evolving at a rapid pace, and employers in the hospitality industry are adopting new strategies to attract qualified job seekers. The use of social media sites like Facebook and LinkedIn to vet and reach out to candidates is commonplace and more establishments are optimizing their career sites for professionals who are on the go and performing job searches almost exclusively on their smartphones. Referral programs are also gaining in popularity, as businesses leverage their existing base of employees to recruit new team members.

4. Raising the minimum wage: The talks now are to raise the wage to $15 nationwide in the United States which could prove to be a blessing and a curse: The campaign to increase the minimum wage – as well as a separate movement to eliminate tipping in restaurants – could move closer to becoming a reality over the coming months and years. Although the prospect of bigger paychecks is appealing, a change in pay rates that drastic will pose considerable challenges to many smaller establishments and threaten expansion plans for burgeoning franchises.

5. Significant growth expected despite sharing economy's impact: Even though sites like Airbnb offer travelers additional options for where to stay, the hotel segment anticipates

demand to outpace supply. In fact, according to STR and Tourism Economics' most recent forecast the US hotel industry is predicted to generate a 5%–10% surge in revenue per available room (RevPAR), with a handful of areas (Denver, CO; Phoenix, AZ; and Tampa/St. Petersburg, FL) expected to see RevPAR improve by as much as 15%.

6. Global expansion and emerging markets: By 2022, the hospitality industry is projected to support 328 million jobs around the world. Approximately one in every ten jobs will be in this sector of the workforce and the job market in the US is supposed to jump by a whopping 49% compared to 2013. Areas with the most potential for growth include Asia and Africa, where business is expected to increase by 6%–7%. However, it's important to note that the worldwide tourism market is volatile and subject to rather quick changes due to concerns about terrorism or natural disasters.

2.5 Digital Futures

Machine based learning is at the height of the technological learning process and talks of today, with an abundance of applications to recognize patterns with broadly automated tasks concentrated through programmed algorithms, lucidly resembling the start of artificial intelligence. Much of the corporate worlds fine-tuning is based on algorithms visible impact to improve core operations.

Business operations in industries across the board are inherently immersed in machines and computers taking on the above mentioned tasks in many forms that include but are not limited to self-driving cars, drone delivery services, smart running shoes, smart water and irrigation technology (SWAT) and super computation.

If current trends and predictions are any indication of how restaurants will look like in the future, then we have to assume that traditional roles of the industry will take a back seat to technology. The digital future is being shaped by all things to do with a growing demand of the "digital age" and the need to access information from anywhere at anytime and with any type of device (phone, watch, augmented clothing, etc.).

The use of devices will allow for the "Internet of Things" to take place and give us the opportunity to connect and access all areas of our social-based applications and social medias. Updates of our personal interests will facilitate an all-new enterprise that delivers content that will be surrounding us (digital billboards are already preceding the initial future stages for this). Emersion into the digital age has already begun is swiftly moving forward. A conditioned example of this phenomenon is the Republic of China's social media platform "WECHAT". With more than 760 million users it's the Chinas all everything

online mobile software serving all areas of usability and functions from messaging to payments.

The digital age is allowing everything to become smaller and integrated, to such an extent that connectivity with handheld and mobile devices have risen dramatically and become the working tool for communication over laptops and computer workstations.

The research we have ready points to the following “Technology is disrupting all areas of enterprise, driving myriad opportunities and challenges”. Business models for corporations are changing due to technological advancement, giving way to how 80% of consumers access goods and services. This is also something being seen in the restaurant industry where the numbers keep rising for customers using mobile devices to view restaurant websites and user review pages.

Digitization is the process of converting information into a digital format. In this format, information is organized into discrete units of data (bits) that can be used to organize information. Digitizing information makes it easier to preserve, access, and share. Text and images can be digitized similarly: a scanner captures an image (which may be an image of text) and converts it to an image file. Audio and video digitization uses one of many conversion processes in which a continuously variable signal is changed, without altering its essential content, into a multi-level (digital) signal.

The Digitalization process has profiled itself into the hospitality and restaurant scene by capturing images and videos that are centered throughout social forums. This in turn will be used to establish VR capabilities while eating wherever you want at any given time. An area that will focused on heavily by developers. The landscapes of this can already be viewed at global conferences such as IBC in Amsterdam.

The days of taking pictures and videos of friends and family celebrating in a restaurant has made way for food to become the center of attention. For a while the chefs who were becoming celebrities in their own rights would establish themselves as the nucleus of their venue only to be written off by the digital testimonials that can be viewed instantly. Shot, highlighted, accepted and shared amongst the social media networks of Instagram, Snapchat, Facebook, Whatsapp, Boomerang and countless other apps that are feeding the market has become the new norm to receive “likes”, “comments” and other forms of gratification.

Restaurants have become increasingly aware of this trend and have learned to acknowledge it with openness, by increasing internet bandwidth and hotspots, evaluating their lighting systems and room settings to maximize this E-commerce revolution. To a number of people, the feeling of eating and drinking is intimately connected to our social lives and in many ways a sign of gastronomical prestige when dining at the more populated establishments around the world. And to post a pic at a dining destination will make for an envious reward.

Following the ideas of Big Data we need to attribute the next sections to an elaborate segment of our writing. This area deals with the next generation of computers and robotics. This following information regarding Artificial Intelligence, Virtual Reality, Mixed Reality, Robotics and Automation have been received directly from the website; techtarget.com, which gives existing facts and material to define practical and scientifically applied information pertaining to technology. We felt that this writing was relevant to our theory and timelines in how far technology is looking to take us and then immerse our theories with to form collective ideas of how it will all be applied to restaurants.

2.5.1 Mixed-Reality

Mixed reality is used as an independent concept or to classify the spectrum of reality technologies, as referenced in the reality–virtuality continuum. As an independent concept, mixed reality combines the best of both virtual reality and augmented reality. When used to classify the larger scope of reality technologies, it refers to the coverage of all possible variations and compositions of real and virtual objects.

Mixed realities which is often referred to, as hybrid reality is the merging of real and virtual worlds to produce new environments where physical and digital objects co-exist and interact in real time. In understanding Virtual Reality and Augmentation, the question surfaces as to how will the mixed realities of technology influence the restaurant industry. The forecast, intuition and following of trends will inevitably lead us to more luring answers to these questions and help us focus on the direction. As with Hagga-Helia's ' The Box', a blank space can be altered to immerse users to undergo varying existences.

With our modern day connectivity through web interaction, we are now given the opportunity for tech to scientifically charge our emotions through the aid and promotion of games, videos and music. The neurons that trigger our senses and emotions are applying

2.5.2 Virtual Reality

The experience of virtual reality is an elaborate feeling of emotions harnessed by realistic images that utilize sounds generated through software to represent an environment that captivates sensations. You are taken out of the real world entirely and surrounded by a new digital world. The right piece of music, sound or vision allows the mind to capture a narrative dimension and internalize the experience by interpreting the information through our conscious mind. Not only is all of this prevalent to how immersed in technology we will be in the next decade, but the speed and acceleration at which are senses will interact with these realities is overwhelming to say the least.

360-degree VR (360-degree virtual reality) is an audiovisual simulation of an altered, augmented or substituted environment that surrounds the user, allowing them to look around them in all directions, just as they can in real life.

360-degree VR can be used for many purposes other than entertainment. The virtual reality technology can be used in most kinds of training that involve a physical environment, including pilot and driver training (as well as actual piloting or driving), surgery, and undersea and space exploration via remote-control robots. There are a number of types of 360-degree VR, including live and previously captured video or real-time, real-time rendered 3D games, and pre-rendered computer graphics imagery (CGI).

Events captured to video from the real world require a number of cameras to record the surrounding environment. While this kind of VR can be rigged by multiple individuals using numerous like cameras, it takes two cameras per view to create depth and a lot of tricky post-processing and editing. 360-degree VR products include NextVR's $18,000, six thousand pixel, six-camera purpose-made device, which records three views from a center point. The 2015 MTV video music awards were broadcast through that method.

CGI-based VR games and computer hardware have been capable of supporting VR for years and visual quality is always increasing, to the point that the need to pre-render graphics is questionable. This is an important improvement because having to pre-render graphics limits the interactivity of the simulated world. Nevertheless, for the highest visual fidelity and realistic lighting, the same computer hardware can produce a better, more complex image when given more time to work on a frame of animation. However, to produce pre-rendered CGI, the time required is multiplied by the number of views required to render a scene.

Although the hardware to create 360-degree VR has existed for years, the technology for the user experience hasn't until recently. A decent user experience can be created using multiple projectors but this is an expensive, bulky, power hungry and hot way to experience VR. Currently available 360-degree VR consumer systems include Oculus Rift, Morpheus, HoloLens and Vive & Gear.

2.5.3 Artificial Intelligence

This following sections regarding Artificial Intelligence, Virtual Reality, Mixed Reality and Automation have been received directly from the website; techtarget.com, which gives existing facts and material to define practical and scientifically applied information pertaining to technology. We felt that this writing was relevant to our theory and timelines in how far technology is looking to take us.

AI was coined by John McCarthy, an American computer scientist, in 1956 at The Dartmouth Conference where the discipline was born. Today, it is an umbrella term that encompasses everything from robotic process automation to actual robotics. It has gained prominence recently due, in part, to big data or the increase in speed, size and variety of data businesses are now collecting. AI can perform tasks such as identifying patterns in the data more efficiently than humans, enabling businesses to gain more insight out of their data.

Types of artificial intelligence: AI can be categorized in any number of ways, but here are two examples. The first classifies AI systems as either weak AI or strong AI. Weak AI, also known as narrow AI, is an AI system that is designed and trained for a particular task. Virtual personal assistants, such as Apple's Siri, are a form of weak AI.

Strong AI, also known as artificial general intelligence, is an AI system with generalized human cognitive abilities so that when presented with an unfamiliar task, it has enough intelligence to find a solution. The Turing Test developed by mathematician Alan Turing in 1950, was a method used to determine if a computer can actually think like a human, although the method is controversial.

The second example is from Arend Hintze, an assistant professor of integrative biology and computer science and engineering at Michigan State University. He categorizes AI into four types, from the kind of AI systems that exist today to sentient systems, which do not yet exist. His categories are as follows:

- Type 1: Reactive machines. An example is Deep Blue, the IBM chess program that beat Garry Kasparov in the 1990s. Deep Blue can identify pieces on the chessboard and make predictions, but it has no memory and cannot use past experiences to inform future ones. It analyzes possible moves -- its own and its opponent -- and chooses the most strategic move. Deep Blue and Google's AlphaGO were designed for narrow purposes and cannot easily be applied to another situation.
- Type 2: Limited memory. These AI systems can use past experiences to inform future decisions. Some of the decision-making functions in autonomous vehicles have been designed this way. Observations used to inform actions happening in the not-so-distant future, such as a car that has changed lanes. These observations are not stored permanently.
- Type 3: Theory of mind. This is a psychology term. It refers to the understanding that others have their own beliefs, desires and intentions that impact the decisions they make. This kind of AI does not yet exist.
- Type 4: Self-awareness. In this category, AI systems have a sense of self, have consciousness. Machines with self-awareness understand their current state and can use the information to infer what others are feeling. This type of AI does not yet exist.

Examples of AI technology

- Automation is the process of making a system or process function automatically. Robotic process automation, for example, can be programmed to perform high-volume, repeatable tasks normally performed by humans. RPA is different from IT automation in that it can adapt to changing circumstances.
- Machine learning is the science of getting a computer to act without programming. Deap learning is a subset of machine learning that, in very simple terms, can be thought of as the automation of predictive analytics. There are three types of machine learning algorithms: supervised learning, in which data sets are labeled so that patterns can be detected and used to label new data sets; unsupervised learning, in which data sets aren't labeled and are sorted according to similarities or differences; and reinforcement learning, in which data sets aren't labeled but, after performing an action or several actions, the AI system is given feedback.
- Machine Vision is the science of making computers see. Machine vision captures and analyzes visual information using a camera, analog-to-digital conversion and digital signal processing. It is often compared to human eyesight, but machine vision isn't bound by biology and can be programmed to see through walls, for example. It is used in a range of applications from signature identification to medical image analysis.

Computer vision, which is focused on machine-based image processing, is often conflated with machine vision.

- Natural Language Progression (NLP) is the processing of human -- and not computer -- language by a computer program. One of the older and best known examples of NLP is spam detection, which looks at the subject line and the text of an email and decides if it's junk. Current approaches to NLP are based on machine learning. NLP tasks include text translation, sentiment analysis and speech recognition.
- Pattern recognition is a branch of machine learning that focuses on identifying patterns in data. The term, today, is dated.
- Robotics is a field of engineering focused on the design and manufacturing of robots. Robots are often used to perform tasks that are difficult for humans to perform or perform consistently. They are used in assembly lines for car production or by NASA to move large objects in space. More recently, researchers are using machine learning to build robots that can interact in social settings.

AI applications

- AI in healthcare. The biggest bets are on improving patient outcomes and reducing costs. Companies are applying machine learning to make better and faster diagnoses than humans. One of the best-known healthcare technologies is IBM Watson. It understands natural language and is capable of responding to questions asked of it. The system mines patient data and other available data sources to form a hypothesis, which it then presents with a confidence-scoring schema. Other AI applications include chalbots, a computer program used online to answer questions and assist customers, to help schedule follow-up appointments or aiding patients through the billing process, and virtual health assistants that provide basic medical feedback.
- AI in business. Robotic process automation is being applied to highly repetitive tasks normally performed by humans. Machine learning algorithms are being integrated into analytics and CRM platforms to uncover information on how to better serve customers. Chatbots have been incorporated into websites to provide immediate service to customers. Automation of job positions has also become a talking point among academics and IT consultancies such as Gartner and Forrester.
- AI in education. AI can automate grading, giving educators more time. AI can assess students and adapt to their needs, helping them work at their own pace. AI tutors can provide additional support to students, ensuring they stay on track. AI could change where and how students learn, perhaps even replacing some teachers.
- AI in manufacturing. This is an area that has been at the forefront of incorporating robots into the workflow. Industrial robots used to perform single tasks and were separated from human workers, but as the technology advanced that changed.

This area will become extremely relevant to our work… Let us paint the following picture for you to explain. The year is 2025 and for hospitality we will use the example of a large-scale VIP banquet, something that will be a sign of the times- a space ship race. At this occasion, there will be a 1000-person food tasting. Normally this would take a staff of over 100 people prepping, cooking and arranging the plates. Now using the 10% rule of automated robots executing the work, we could expect 10 of them prepare the meals, of course with the new innovations and equipment that will be used in the coming decade. Think only of the savings that will be made with staffing overheads alone.

2.5.4 Augmented Reality

As we have been constantly connected over the last decade through the internet and its hardware and software applications, it only seems fitting that the next generation will allow for where able devices to inform us the location of a person so you may stay completely attached, if you so choose. Augmented reality will be just that, an integration of digital information with the user's environment in real time. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it.

Boeing researcher Thomas Caudell coined the term “Augmented Reality” in 1990, to describe how the head-mounted displays that electricians used when assembling complicated wiring harnesses worked. http://whatis.techtarget.com/definition/augmented-reality-AR. One of the first commercial applications of AR technology was the yellow "first down" line that began appearing in televised football games sometime in 1998. Today, Google glass and heads-up displays in car windshields are perhaps the most well known consumer AR products, but the technology is used throughout many industries including healthcare, public safety, gas and oil, tourism and marketing.

Augmented reality apps are written in special 3D programs allowing the developer to tie animation or contextual digital information in the computer program to an augmented reality "marker" in the real world. When a computing device's AR app or browser plug-in receives digital information from a known marker, it begins to execute the marker's code and layer the correct image or images. http://whatis.techtarget.com/definition/augmented-reality-AR

AR applications for smartphones typically include global positioning system GPS to pinpoint the user's location and its compass to detect device orientation. Sophisticated AR programs used by the military for training may include machine vision, object recognition and gesture recognition technologies.

Renowned futurist and innovator Maurice Conti sees a world much different than how it looks now and this is nothing new for innovation and change. “There is new partnership developing between technology, nature and humanity. And with this great change, the world and industries will look much different”.
https://www.theguardian.com/society/2011/jan/02/25-predictions-25-years

The idea of Augmented Reality’s technology, superimposes a computer-generated image on a user’s view of the real world, providing a composite view. It’s a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data.

Keeping this in mind it can assist in generating an agenda for staff as well as clients from the back to front of house, although it can best be justified for the BOH. With AR technology you see graphics overlaid on the world in front of you as it enhances the real world.

In a perfect assessment of what augmentation may commit to in the next decade within the restaurant industry, we play out the following scenario. Picture walking up to the restaurant with your augmented devices- something as simple as a beacon, watch or phone. As you enter the establishment a robot or human scurries over to you with a plethora of information pertaining to prior visits, number of guests you have arrived with and the state of your nutrient and body levels (what is your blood sugar level). With this, the information is filtered over to the kitchen, so a meal best fit to your current state is prepared. Sound to far from normal? We think now…

2.5.5 Automation

IT automation is the linking of disparate systems and software in such a way that they become self-acting or self-regulating. An example of IT automation in practice might be as simple as the integration of a form into a PDF that is automatically routed to the correct recipients, or as complex as automated provisioning of an offsite backup.

IT automation has some limitations. In the security and risk management arena, automated systems can make errors, stemming from a weakness in human-level pattern

recognition and language comprehension. An automated system is not the same thing as an intelligent system; it does not learn from past experiences. For instance, an email spam- filter is an example of an automated IT process. Occasionally, valid emails end up in the spam folder and unwanted spam email gets past the filter and into a user's inbox.

While the goal of IT automation is to eventually demonstrate a strong ROI, there can be a fairly substantial investment on the front when deploying IT automation software, systems or infrastructure. http://searchitoperations.techtarget.com/definition/IT-automation

2.5.6 Interpreting the technology and Restaurants

Now that we have a cerebral understanding of the interpretations, definitions and descriptions regarding the level of technologies and the direction in which they will proceed, we can have a better idea of how this will fit into the restaurant industry. Can you picture the day you "fly" your car just below the clouds to a restaurant station and order a notorious meal for your forward automated journey? Or better get jet-rocketed up to space for a meal in the stars. What will the future really allow us to do in the future, well that remains to be seen. With that we have elected to introduce a quantified research environment for a group hospitality professionals to give us their professional forecasts. This methodology has allowed us to envision how others see the potential of interpreting restaurants and technology integration.

Within the restaurants a Robot or AI will become your server and everything we where on our bodies will become some type of augmented reality harnessing and processing information to an elaborate CRM system. Virtual Reality will allow us to see the world the way we wish to see it and not with the massive optical hardware we are using now and the automation systems will be running concurrently with our daily routines.

Today's consumer of the next generation will seem to have more time on for themselves, want for more experiences and look to do more with their lives- putting the "4 hour work week" to actual use. This will all look to appeal in whatever they do and have the following worth of life in:

- Value driven
- Heath conscious
- Hyper-connected
- More Social activity
- Collaborative lifestyles

This means the digital strategy put together to market to the consumer has to be well thought out and understood by the restaurateur as well as the consumer.

Personally and with a number of people suggesting they have the same feeling, an area that we have detected that will have considerable significance even though it was touched on only lightly is “pattern recognition”. The reason being, since we already have databases and CRM systems in place at restaurants recognizing individual customers, the natural and organic framework would be to follow their lives as loyalty customers, giving way to the scientific approach of predicting their next steps. These pattern generating applications will recognize as to what, when and where they will they be eating according to their archived data.

For instance a new start-up company called Improbable, who is using a technique that splits up massive simulations and farms it out to thousands of public servers, has already been able to simulate entire cities. The company claims to have produced the most complex urban models in the world. What this means for the restaurants is just like Haaga-Helia’s “The Box” theme, any type of idea and concept can be interpreted in accordingly.

2.5.7 Daily thoughts to Invest Into the Future of Restaurants

Although this study is based on the integration of technology and how we seek to establish clarity in forecasting the future, we felt it important to suggest some ideals and goals we work towards now and on a daily basis that will enable us to adapt to the vast future of 2025 as it arrives. Management structuring is a heavy concept that companies are dealing with daily and for the acceptance of any concept, technology, application, computer system we want to be prepared to manage ourselves and our companies with efficiency, safety and happiness while saving some money along the way.

Invest in the Brand & the Magic:
Create a Vision & Communicate the vision to how you want it to be perceived will empower you and your team to always act on the mission and goals.

Invest in Educating Ourselves:
It’s a must to become a student of your task and becoming educated about the modern day marketing, technology and interpretation of business will educated you on your surroundings

Invest in your business relationships:

Customers and consumers are super important to your business and you need to constantly stay on top of the trends that they would like to see in your establishment. Suppliers are also people you need to building a strong community and network with.

Invest in educating your staff:
You want to empower others to act on the vision you have created with your establishment. Believe in them & give them proper training and reassurance. You can also establishing a sense of urgency & assign realistic tasks to solve on their own which gives them a chance to plan for creation and short-term win. Always be initiating talks so they understand you value their thoughts.

Invest in covering yourself:
Remember that Noah built the arch before the flood so you should always have a good lawyer and a good accountant on retainer to assist with any situation that may arise in terms of audits or accidents. With that a good PR firm that can assist with any news releases that need to be put out. In the fast paced no nonsense, I want it all now mentality we are seeing today, it only makes

Invest in Well-being:
Your body is the most important tool you will ever have and needs to function and a high pace constantly. Take an hour out of each day for sport, gym, tennis, yoga whatever is super important along with a healthy diet, lots of water and not too much coffee. Get the sleep you need to maintain strength and focus throughout the day, it is always needed.

Do not invest heavily in your emotions. It may be vital to know that everything you do is going to effect you down the road- and this could be either positive or negatively

3 Methodology

3.1 Selection and Justification for the Delphi Method

Finding the right technique to quantify the results of our study was something that took a bit of trial and error as to which type of research would be applicable to our findings. Our first go was in the quantitative forum, since there was going to be significant amounts of literature to observe. This lead us to the Research Onion, an approach most effectively used for situations where there are a large number of respondents available and where the data can be effectively measured using a group as a whole to statistically analysis and show a subjective philosophy to gain acceptance. We followed the strict guidelines of this process under until realizing the following result orientation would not suit the forecasting goals we seek to define. The assumptions created by a research philosophy provide the justification for how the research will be undertaken (Flick, 2011). Research philosophies can differ on the goals of research and on the best way that might be used to achieve these goals (Goddard & Melville, 2004).

The foundation of a discipline, as the foundations of a house, serves as a guide and basis for the placement of the building blocks of knowledge gathered through research and development activities. It is the definition, exposure, and investigation of the philosophical foundation that distinguishes a scientific profession from other endeavors. Linstone and Turoff (p.15). To find information that would be most relevant to our study and identify not only with the text but to make actual meaning out of it, we use the following quote. “Interpretation of information is said to be a complex and dynamic craft, with, as much creative artistry as technical exactitude, and it requires an abundance of patient plodding, fortitude, and discipline”. William Miller and Benjamin Crabtree (1999, pp. 138-139)

There are many changing rhythms; multiple steps; moments of jubilation, reevaluation, and exasperation… The dance of interpretation is a dance for two, but those two are often multiple and frequently changing, and there is always an audience, even if it not always visible. Two dancers are the interpreters and the texts”. (pp.138-139). We use this passage to express the immense work in unfolding the information provided from the many diverse forms permitting us to distinguish how technology in our existence is unfolding.

Sherry Turkle’s (2011) book, *Alone Together: Why We Expect More From Technology and Less From Each Other,* provides many examples of this analytic dance, although of course in the published book we are no longer able to see that dance in terms of her original notes. She often describes what she observed in class- rooms. For our expression

of observation, we were able to read through respondent responses and justify information that we may have already convinced ourselves of with, thus creating a climax of our own dance session.

In establishing the most relevant and sustainably responsible structure of information and most notably to use a system of correlation that observes data rather than numbers, the method of research we elected to reinforce our study and subject matter was a qualitative research method in the Delphi order of “Future methods”. Due to the expressed nature of our subject and its dealing with perception, acknowledgment, conceptual ideas and a conclusion to how the future may appear, Qualitative research was the most relevant and fitting course of participation observation.

3.2 Data Gathering Process

During the evaluating process the various approaches for qualitative research methods leading us to the Delphi branch of study enabled Future methodology to exhibit a strong evaluation of the information provided during the research and the respondent practices. This method allowed for text to be evaluated during participant observation interview sessions from a written form and the analyzed information was correlated and featured throughout our writing.

From the studies we have read we found that, Delphi is a structured communication technique or method, originally developed as a systematic, interactive forecasting method. It has been widely used for business forecasting and has many advantages over other structured forecasting approaches. The initial contributions from the experts are collected in the form of answers to questionnaires and these answers are then used to form solutions to the theories or problems at hand.

This research approach is formed with a philosophy, that it can investigate a wide range of social phenomena, including feelings and subjective viewpoints. While adapting the qualitative research segment approach of Delphi, we can elaborate on the most effective situations. For our study, using a small numbers of professional respondents whose expertise in their chosen industry has effectively measured disposable forecasting results was a most effective course of execution. Employing the respondent statistical methods of analysis techniques allowed for a cluster of information to be delivered individually as well as by the group in a sample section. In absorbing the Delphi studies, we have gathered information utilizing prospects from the a variety of qualitative models.

This presents the challenge of creating a methodology that is framed by the respondent rather than by the researcher. As we are using a forecasting and futuristic approach to identifying what the shape of a new decade will become, it is very suitable to mix the qualitative and quantitative realities- much to the effect of “mixed-realities”.

3.3 Data Analysis Process

The original Delphi study was a spinoff from “Project Delphi” the name given to an Air Force-sponsored Rand Corporation study back in the early 1950’s. The object of the study was to obtain the most reliable data possible, in hopes the opinion of our panel of experts would be sufficient enough to make a valid assertion and forecast for the future of restaurants and the hospitality industry. A series of intensive questions delivering a controlled opinion and channeled feedback would be perfect for us to assess. What we felt most pertinent about was if the efforts of Delphi applications would assist in processing these forecasts.

Finding the right technique to quantify the results of our study was something of a conundrum due to the various ways of research data collection. Some methodology depends on theoretical assumptions used in the analysis with a tendency for researchers in the functionalist, positivist paradigm, to collect hard objective numbers. For example; share prices and accounting numbers can be viewed though observation, experimentation, extraction from published sources, questionnaires and structured interviews. Many emphasize quantitative techniques over qualitative methods. “Softer” humanistic researchers in the interpretative and radical humanist paradigms use the latter generally.

Although purists in either paradigms stick to their own methods, it is not a case of ‘neither the Twain shall meet’ as researchers have been encouraged to mix and match (Tomkins & Groves, 1983). This researcher has followed this route. Further, “ triangulation”- a notion introduced from military studies by Denzin (1978) (as quoted by Tomkin & Groves, 1983), has been suggested as a way to make research studies more robust and rigorous by verifying results through different methods, thus ensuring that the results are not a function of the research method.

So now we relate Interviews as a main source of our analysis process. Nachmias and Nachmias (1996, 232) defines an interview as a “face-to-face, interpersonal role situation in which an interviewer asks participants questions designed to elicit answers pertinent to the research hypotheses”. However, Sekaran (1992) reminds us that interviews need not be face-to-face as it can be conducted through the telephone or can even be computer

assisted. Even though Nachmias & Nachmias promote face-to-face as an extremely personal process of interviews, we chose to use interview questions for the respondents to write their answers accordingly.

3.4 Limitations of the Method and Ethical Considerations

Do to the nature of the information gathered for this thesis we have to look at the inner workings of different styles of research to appropriate our works. The core analysis is invariably qualitative while a small but integral part is delivered through quantitative. With this the varying process in that can be used we have the opportunity to review the many ways in which qualitative data analysis differs from quantitative analysis (Denzin & Lincoln 2000, 8-10; Patton 2002, 13-14). Each difference reflects the qualitative data analysts' orientation to in-depth, comprehensive understanding in which the analyst is an active participant as compared to the quantitative data analysts' role as a dispassionate investigator of specific relations among discrete variables:

- A focus on meaning rather than on quantifiable phenomena
- Collection of man data on a few cases rather than few data on many cases
- Study in depth and detail, without predetermined categories or directions, rather than emphasis analyses and categories determined in advance
- Conception of the researcher as an "instrument", rather than as the designer of objective instruments to measure particular variables
- Sensitivity to context rather than seeking universal generalizations
- Attention to the impact of the researcher's and others' values on the course of the analysis rather than presuming the possibility of value-free inquiry
- A goal of rich descriptions of the world rather than measurement of specific variables

Table 1. Qualitative versus quantitative research (Miyauchi 1995)

Research type / Comparison dimension	Qualitative research	Quantitative research
1. Objective	To gain a qualitative understanding of the underlying reasons and motivations	To quantify the data and generalize the results from the sample to the population of interest
2. Type of research	Exploratory	Descriptive or casual
3. Type of data gathered	'Real', 'rich' and 'deep'	'Hard' and 'replicable'
4. Data collection	Unstructured	Structured
5. Orientation	Process-oriented	Outcome-oriented
6. Types of questions	Probing	Limited probing
7. Sample size	Small	Large

8. Information per subject	Much	Varies
9. Data analysis	Non-statistical/ subjective, interpretive	Statistical/ statistical summarization
10. Administration	Requires interviewer with special skills	Fewer special skills required
11. Ability to replicate	Low	High

4 Results and Discussion

The survey section of our work aims to identify examples of how restaurants and professionals are actually viewing, deliberating and forecasting for the future of restaurant hospitality and how technology will deliver on the promises that corporations are hedging towards. In no uncertain terms, the information will be analyzed and the relevant results will be correlated to determine what feel could be a pattern to dissimulate. Change is happening and it is inevitable, so we need to be able to adapt our business models to deal with constant adjustments that will mainly be driven by technology during the coming decade.

The questions are based primarily to decipher the frequent summary tables, which penetrate daily data and introduce a theoretical model for future forecasting. In addition to procedures and processes that the respondents carry out throughout their work day, there is an authoritative approach to how they execute and analyze sometimes without them even noticing. An example of this is shown in the way they follow trends within the industry. There are so many ways to receive information these days, whether it is social media, news, trade reports and even visiting other establishments.

So the information we were seeking to receive from respondents was to support and impact our study and determine what really is the future of hospitality and assist in answering our question **What will the future of Hospitality and Restaurants look like in the coming decade (year 2025)**. Adding this all up is meant to stimulate restaurant professionals, owners and consumers on what the industry of restaurants can look like during the coming decade.

4.1 Interview Questions

The following questions are generalized and open-ended to derive at the thoughts and ideas of restaurant and industry professionals who have their eye on technology, restaurant trends and influences. Each individual respondent was hand picked for their experience consistent to evaluate how industry professional's view and forecast the future in restaurants and hospitality.

The Population of the interviewees:
a) is an entire group of people or thing that we can collect data from in order to conclude our findings
b) deliver variable differences throughout their areas of expertise
c) have certain characteristics and quantity that can be measured or counted

Question 1. What are the significant changes or trends that you will be addressing over the next decade in your restaurant?

The consensus population of our interviewees seeks to implore that personalized or individualized consumer experiences, to the point of artesian quality will contribute to major shifts in restaurants as well as the following. “I would address changes in people's personalized experience at the restaurant. I would want to evolve the dining experience to have individualized as possible to have the diner's experience be singularly unique”. This seems to be a focal point with regards to the heavy food intolerances we are seeing more of in the past few years. As one respondent suggests “Gluten free, dairy free and vegan requests are more regular than a group with nothing they can’t eat. So coming up with menus that are tasty, nutritious, satisfy these new requirements and are also not alienating to normal people is a key concern”. We personally feel people will become even more conscience of veganism/ plant based food diets.

Streamlining of business systems delivered from the technology forum will enhance customer transactions, reservations, payroll, POS, inventory and all other back-end services. “Tech based trends” featuring “a service model innovation with the use of technology” is going to become more intuitive as we move closer to 2025.

One respondent made a very significant point as to keep the loyalty of their customer base relevant with regards to “Entertainment”. “Entertainment, this one seems to be the hardest on these days as our new emerging customer is use to a very different way of entertainment, "kids" are glued to their phones and taking pictures to gain "likes" is everything thing to them. Food always has to look “insta worthy” not even taste matters it seems.

Much concern is also being identified to staff considerations and whether there will be a shortage of “competent” workforce in our futures. For the United States the issue of higher wages is becoming a new narrative due to more regulatory models being implemented. “Labor is a huge threat to the business model. The fight for $15 (per hour) is reasonable as a citizen, but unreasonable as a restaurant owner. Elimination of the tip credit, paid sick leave, locked-in scheduling will be very difficult to navigate”.

And the last noteworthy point that stimulates the environment to account for “zero waste and only seasonal foods”, that will attribute to a more sustainable existence.

Question 2. What will the future of Restaurants look like to you in the coming decade (by year 2025)?

“The future will be a more digital experience and less human experience. Most of the interaction will be computer based i.e., menus, servers etc.” “Technology will be into every detail” of our lives and this is exactly how we feel in the coming decade, which is the reason we chose this topic. Having the interviewees respond with the same type of opinion makes our work that more solvent. “More digitalization and third party services integrated in the service model” is the guiding light towards the future.

It seems though that a majority of respondents also believe that a faster more efficient food service is where we are being lead. Fast-casuals will emerge while “casual sit-down” will suffer. “The “app-market” is making it easy for people to stay home and order in. The whole function of grocery shopping and cooking is losing its place in busy households because it’s not fast enough and more convenient to order in”. “Restaurants should embrace the takeout market more and dedicate more kitchen space to takeout orders”. “Implementing Wolt (Finish application for home delivery) and considering other dine home applications to increase sales”.

As we stated earlier the idea of more efficient experience is an overlapping statement with regards to living in the future of 2025. “Faster experience for the customer”.

Thoughts also trend towards “Maybe a more holistic experience, with multi-sensorial elements, not just tasting or seeing something but also feeling…e.g. drinking experience where the alcohol is actually absorbed from a mist in the air, intoxication without even drinking…” “Restaurants will continue the trend toward catering to the health conscious. They will become more culturally focused”.

Question 3. How do you follow trends and advancements within the industry? (Trade magazines, travel, etc.)

The industry for restaurants and hospitality has long been a collection of individuals who stay focused on a singular occupation, however over the years since technology and especially the internet has arrived, sources of at the moment information has become vital to the survival of the institution as a whole. And with that, the strength in respondents relating to this question was heavily based on direct interaction with technology driven information delivered from “Instagram, Facebook, Blogs and websites”. But luckily there are still people that walk away from their phone or computer to travel, network and “sample other cultures”.

As reflected throughout our writings, trends are an area of great importance and positioning towards and learning about these occurrences becomes a natural state of the trade. A blueprint reference to this could be- “Reading up on chemistry related to food is great out of the box way to create a trend”.

The industry of hospitality as a whole is much superior to its ancestry in education, submersion and execution. With that, the most intricate response in this section was derived from a Cornell grad that is heavily involved and dedicated to the overall industry and its applications to society. Her response allowed us to identify with a group whose mission is used to encourage the future rather than just draw from daily endeavors. “Industry publications, sitting on Boards of state restaurant associations, colleagues, travel and research, constant learning, lobbying Senators and Congressmen in DC as part of a political action committee (PAC), seeking out mentors and collaborators”. In contrast one respondent referred to a social media outlet as their source of education- “Instagram is a major one”…

A more drawn down interactive return relating to professional education was following phrase- “I love to travel and go experience others art of the business. Also I hang with a lot of other industry people and we're always sharing and asking what’s new out there”. This is a more holistic and one-on-one approach to gaining comprehensive direction in persistent and tireless profession.

Question 4. How are you preparing for the future of technology integration in restaurants?

Some are not fans or proponents of the initial push towards technology integration within the industry, however they still understand that resistance will be not reward them in any way and acknowledge the accept that at some point they will be intermittent to the change.

The majority of respondents are a continuum of shepherds who graze the landscape, gathering up a sense of where the heard is moving. “Following industry leaders for innovations that fit our needs and simplify with less wires and devices. Also keeping an eye out for newcomers. At the moment we’d start buy running everything off of Apple or Android devices”.

Moving towards a more fluid and efficient system of POS is a reoccurring reflection throughout this question. “Payment has been the biggest headache with the chip and pin”. This is a broad area, which respondents attribute to their present distress, however as

presented through the duration of or work, we have highlighted the existence of new and seamless technologies and customizations that will assist with this in the coming future.

There is a ridiculous phrase spoken in the movie Talladega Nights that goes- “If your not first, your last. And in the spectrum of leading technologies, this could not be more true. This carries many professionals to succeed and introduce the newest technologies into their properties, as would be the reason the following response was contributed; “Of course trying to be aware of the latest trends myself and be among the first ones to take any new solutions to use when they are launched”.

Question 5. Describe how you see the influence of Artificial Intelligence in restaurant by 2025?

We open up this section with a response that in many ways, sums up the feelings of the interview group as a whole. “Artificial intelligence will be a huge part of the restaurant industry. It will permeate all facets of the industry from menu item selection to restaurant design as well as selection of staffing”.

“There will probably be restaurants operating without any humans but the majority of restaurants will keep on operating in the same ways as for centuries. We always try to keep a personal human touch as it’s our core value”. This was an area we touched on during our work with regards to the history of restaurants and its progression. For a very long time there has been little to no change pertaining to the orientation of restaurants and their DNA. Reshaping of the industry will be an abominable challenge, but the introduction of technology will be indispensable.

Proponents feel that the course of AI will assist in the following intellectual properties; “Biggest use will be in CRM/Marketing, second will be forecasting, third will be enhancing customer experience through better recommendations”.

We felt the response to this question by highly capable individual, whose education and business has taken around the world to assist in their forecast of trends. “Not sure if it will have a huge effect by 2025. Probably there will be some pioneering restaurants that will integrate AI in their services or use the help of for example IBM Watson in creating recipes. It would be cool to have an app where you could for example tell how you are feeling today and maybe pick some of your favorite ingredients/ diets – then an AI would tell you where to go eat or even let you make a custom bowl or drink. This type of model could easily work in fast food chains like Subway”.

As we seem to gather an excessive amount of information from social media, the next stage of restaurants could integrate the following: “I had seen on Facebook an AI robotic arm flipping hamburgers, it knew where they were by an inferred scanning system and estimated their cooking process, flipped and placed on a bun. No human integration to control it. I would definitely see this being the future for fast casual before 2025”.

Question 6: Describe how you see the influence of Virtual Reality being used in restaurants and hospitality by 2025?

The consensus according to our interviewees weighs heavily on acceptance of VR in restaurants, which is something of a surprise, with regards to the responses we’ve received for other questions. With the idea that restaurants haven’t t changed much over more than a century didn’t give us much confidence in the results relating to VR’s integration throughout the industry. The overwhelming response was that VR will be used to “enhance the overall experience”.

One interviewee sees the immersion of VR as regular evolution for restaurants to absorb accordingly. “We try to stay on top of entertainment technology. VR will be integrated into restaurants just as jukeboxes were, and later TV’s were. With the emergence of e-sports, we will also see a presence in VR gaming for sports themed concepts”.

It’s our belief that pressing forward, future restaurant architecture will eventually be fitted with a variety of technological upgrades to emphasis VR, augmentation and other gadgets. “While building the restaurant you can already experiment with the customer experiences the design and layout of what the customers would be seeing and feeling”.

However with acceptance there will always be protagonists who’s opinion differs when technology is on the board. “I think virtual reality is something that people have always wanted but will ultimately further alienate people from each other and their environments. I suppose it could be used in restaurants, but am not looking forward to spending time in a headset”.

Our studies of VR lead us to ideas in which its integration with restaurants and consumers reactions would be influential in the design of new spaces. And the response to this derived from our interview reinforced our belief. “Potential customers could virtually sit in on events, dinner’s and also view our kitchen and process”.

VR as an instructional instrument is something the interviewees felt strongly about with statements; “we could use it to train kitchen staff via virtual cooking”. This is an area we

also thought will take off as well in the future, not only in the area of staff integration but for “virtual improvement” of techniques for everything. “Maybe for kids to educate and see how the food came or project yourself in a different surroundings or countries”.

“I could see some virtual reality elements to be added to enhance the dining experience but I would see this more in fine dining restaurants or similar. For example virtual reality to change the environment, weather, time of the day etc.”

Question 7. Do you see restaurants staff wearing clothing or other devices to interact with customers in an Augmented Reality?

This idea of augmented reality seems to be a concept lost on the majority of society. Many people are not privy to its effects or even understand the benefits and advantages it may deliver. The view from interviewees is that only under “special experiences” will augmentation play a part in restaurant immersion. The belief for some is that it’s “more of a gimmick as for us”. However its introduction into the industry will allow for the integration of digital information with the user's environment in a real-time setting and the long-term evolution will allow for more acceptance by 2025.

The bottom line is that the above estimation by respondents is a conclusion derived from un-education of AR. There are still patrons who are definitely planning for the future of its strategic development, but its going to take a while before the masses become patrons as the following statement will suggest; ”Augmented reality is the future of the restaurant experience. Servers as well as customers will both use AR. People will want to see where their food came from and AR is the perfect tech to help achieve that. It will be a part of everyday life”.

This technology as stated in our work, with roots originating in the early 1990’s and we are finally starting to see the emergence of specific and particular applications of its DNA in a variety of industrial destinations.

“The technology known as RFID we see as being a great way to speed things up like the apple pay”. It is already being initiated as bracelets for concerts to alleviate paper tickets that are thrown on the ground and create more waste than purpose. For restaurant and hospitality use it will become more valuable for hotel guests to leave everything in their room while they are on property to quantify payments. And with restaurants these chips will eventually be embedded in phones, watches or maybe even clothes to settle amounts.

Question 8. How will the customer experience grow as various technologies are introduced? Describe what you think restaurants will offer the customer to keep them coming back to their establishment.

“Customers are all the time looking for new experiences, they are bored with just the normal thing…I think the biggest opportunity for restaurants is to offer something technology based that would let the customer create something on their own, for example pre-order a bowl where they would have picked the ingredients themselves. Of course this is very similar to just ordering any normal custom made salad but the technology should be built so that the customer actually enjoys the experience and takes it more as something fun. Also something could be taught about the ingredients and the nutritional information”.

If you know your customers better they will return leave happier and return more frequently. Most people don’t realized how hard it is to run a restaurant- the constant pressure to make small profit margins on perishable items, the long hours, staffing issues, high overheads. The list can go on and on, which in turn can leave many owners and shareholders jaded. And with that comes our interviewees being able to really voice their opinions on how they are looking to be heard in the future. There is a tremendous “I think a lot of people like to see online reviews and this is good and bad - it empowers jerks and can make restaurants scared of telling a customer to get out. There are a lot of dumb people who can write reviews and this is a threat to good businesses. Also bloggers are generally complete wastes of space”.

“I see a lot of places putting up stuff that people will take a picture with and put on their social media profiles. That’s gimmicky. I think it’s also ridiculous that people try to book restaurant reservations online. It’s a meal - don’t create email work for someone just so you can come eat a pizza. Come in. Eat the pizza. Pay for the pizza. Get out. End of story. No emails”.

Question 9. Do you see customers being served by a Robot or Artificial Intelligent laborer?

The quantitative data and answers gathered from interviewees in response to this question was simple “Absolutely”…

Robots and Artificial Intelligence are an area the world is really starting to believe in. In the past this was a concept so far fetched that it was traveled nowhere farther than Hollywood. The future is NOW for this notion and the interviewees all agreed, whether

they liked it or not, its inevitable that we will be working side-by-side with robots in some form. “Yes, definitely. At first, these will be used to leverage the humans, later they will replace humans from many positions completely”. “Yeah for sure in some cases but it will never replace the experience of a professional waiter or bartender who is a real person”.

With introduction and inception throughout the universal hospitality industry, there is skepticism relating to the direction of a flaccid existence when robots become an intricate part of the age-old craft of service. “I hope not. but yes I do. it will take away from the personal touch I love to give”. “Possibly, but it would make for a cold experience”.

The notion that we are going to be using them in every area of industry by 2025 is not very likely, as per our data but, “In fast food restaurants yes why not. But not anywhere where the experience requires a human mind to make it valuable, fancier restaurants etc.”.

Some one not at all intrigued by the addition of robotic and AI labour “I hope not, but yes I do. It will take away from the personal touch I love to give”. So, I guess you cant please everyone when you speak about how the future will integrate and take away jobs.

Question 10. How will POS and payment methods be developed to simply and expedite payments?

Point of Sales are becoming an extremely hot topic these days with the worlds CRM, processing and loyalty networks seeking to establish a more centralized and efficient systems. The current trends are pushing towards wireless and paperless applications that allow the consumer and the restaurant to pursue a seamless interaction. This is now by the year 2025 the following statement may apply; “There are probably no limits of how to pay, no more cards, cash or receipts. People will have a personal profile attached to phone or device that will be carried at that time”.

The idea of “efficiency” is an underlying view pertaining to our study. Every interviewee, futurist, specialist, professional or what have you has labeled efficiency as a key to the integration of technology. “Fast, secure and less paperwork”. Less paperwork does not only concern the hassles of extra work, it also plays into the idea more sustainability in the environment.

We actually feel the same way when it comes to a more personalized, secure and efficient style of payment method. “Definitely things like Apple pay and being able to just tap and walk out are good for speeding up payment. Anything that can get you money faster is

good". And 2025 will most likely see the use of "Retina scan + thumb print". Now we are starting to see how the creative minds of industry such as hospitality are going to start shaping the future. This is not even a forecast anymore, people see, believe and want this to happen. To this extent we see how a mind can devise a solution for anything, devoid of limitations- "More apps and pre-payments, some kind of waiting line management feature to predict and avoid waiting lines".

Question 11. Describe what the average restaurant consumers will be focusing on by the year 2025 in regards to their "needs"?

When speaking about the future and societies acceptance to where we are venturing, you start to realize that not many people understand the dynamics of what is going to come. It's a tricky topic as people forecast with money and understand that they need to save as much as possible to live the life they would like, however when you resolve to their views on future endeavors, you receive opinions that have no real clarity and everything is based on feelings. "Feelings have so much to play on this, and I don't think that will change. So places are just for nourishment. Others need a cool feeling (atmosphere) to make the meal taste better, this is where the wow factor has to come into play, to make the average person feel better about spending their money at your restaurant. I still think their needs will be entertainment this could be just in decor to a show or wildly plated food like Barton G".

We realized through our journey of information and research how a question like this opens up people's creative side allowing them to deliver a qualitative responses that can be obscure to say the least; "I think that people will probably devolve into a subspecies of creature that must spend endless amounts of time photographing their food before they can consume it. Eventually it will take 12 hours to serve one plate of pasta because it needs it's own PR rep and press release before it can be eaten". In some instances, they become almost jaded by society and feel it has turned on them.

Respondent and interviewee believe the future will serve all their needs and desires as efficiently as possible. This sounds rather selfish, however it really is the way society is actually driven these days and that won't be changing anytime soon. "Pleasure, enjoyment, health, efficiency and practicality". This is who we are now!

And when I say we have become "jaded" this is exactly the type of research we have gathered "I'd say a crappy restaurant with good online presence will beat good restaurants without a good online presence. Especially in tourist destinations, people rely on the Internet more so than anything".

But we haven't lost all hope, as some believe we will access more of a value driven existence. "Consumers will be more aware of the quality of the ingredients and the nutritional values. They will want to know what was put into their food, where it came from, who made it etc. They will all in all expect more transparency".

Question 12. Describe what you see the influence of artificial intelligence in restaurant operations and management. For example will there be robots working in the back-end of the restaurant?

"Everything that can be automated will be automated. From books to wine cellars, from cooking to cleaning, from reservations to recommendations, payments" and beyond...

The statistical data received from the interviewees was 100% in agreement that some form of AI or robotics will be present in the restaurants. The back and front-ends will still have humans in attendance to perform relevant labour, however in the coming decade we will see the technological shift. What we found quiet interesting while processing our data for this question was that people felt strongly about health and safety, cleaning and HR, and used exact terms when speaking of these. "Yes there will be 100%, it will minimize the threat of overtime, of class action, salary hike, etc.".

Some jobs are more defined than others and we wont necessarily see robots spraying glass cleaner to wash the windows but "Fryers can clean themselves, grease systems funnel and replenish themselves, kitchen display units drive the timing of food prep and presentation. Each of these things was once done by a human".

The shift may not be so advanced by 2025 to handle as many jobs as were initially projected or forecasted when watching sci-fi movies. Food quality is an overlapping statement from interviewees, which seems like a personal opinion if that stage of technological conception will be ready. "Robots will mainly handle scheduling, inventory tracking and ordering. Food quality and safety, I'm uncertain if by 2024 there would be line chef automation". "Yeah maybe for some tasks but you're still going to need a person in charge of HR issues, food quality and things a machine can't replace".

"Well that's the dance that's happening now," says Rachel Maguire, research director at Institute for the Future, a non-profit think tank. "We're in the age of omnipresence, so the question is, can we solve for the privacy issue so we and future generations can enjoy the benefits of technology"?

It would be safe to say that respondents want to utilize Robots and AI to free up their own time and project efficiency models to dictate this. “Maybe the new tools will help managers with efficiency so they can spend more time on other things on a personal level - that would be ideal”.

Question 13. How will restaurants market and deliver offers to customers in the future?

Marketing has always been a business function that constantly evolves throughout time and industry. From print ads in women’s magazines, to computer banners, advertisers are always searching for an edge to gain access to the psyche and influence consumers. Now with the “Internet of things” taking shape, we see social media taking full advantage of a customer’s future interaction. “Influence” happens to be a word that was picked up in our data collection

Respondents felt strongly that social media is the key “influencer” here, so much so that that in 2025 restaurant marketing will be an immersive existence. “Really though I think that social media and online presence is going to be a big driving factor for restaurants in 2025”. “Direct, to screen, bypassing email and SMS”. As is already customary now in places like Tokyo, Singapore, New York City and Shanghai, marketing through digital media is all the norm. In the coming years, as is portrayed in the futuristic movies such as, Ghost in the Shell; everything we see will be marketed digitally. All painted billboards will be digitalized and interactive.

The use of social media applications built into their networks is really quite impressive as and delivers information to the consumer as well as acting as a CRM system layered into the platform for companies. They see what you click on, where you are, how you got there and what you will be doing next, without even intruding on your space. Your full digital imprint is naked for developers to see. It’s the dream marketers and advertisers have been searching for. “Social media and location based advertising is effective to advertise to people already in an area. Ad tech will evolve to be able to better target people who are likely customers”.

And by utilizing the same mediums people read about everyday- that being celebrities they open up even more. “Digitally, through social media and influencers they would rather have a friend or an ‘idol’ tell them about something cool”

“We will use all relevant platforms for marketing and communicating with customers”,

Question 14. How will you be using social media platforms during the next decade? Elaborate to its use?

As was the answers to the previous question, social media platforms look to add value to advertising. "We've been using Facebook to advertise. We target people we think will like our services, then re-market to them once they've become a customer. It's always easier to keep a customer than get a new one.

Our research on this topic also brought interviewees to express the more efficient ways communicating will be updated. "My granny is on Facebook now". This statement along suggests that technology has been made so easy, that a generation who never saw a computer for the first 2/3rds of their life is now using it to keep in contact with friends and loved ones.

Trends are all the norm when it comes to the direction of social media and influence. With regards to platforms, the growth of the technology applications is key. Look at the substance Facebook was able to create once it initiated its "chat". The efficiency between user interaction was overwhelming. Same with Instagram and its use of pictures and tags to initiate verbal and unarticulated speech. These data moves have become more profound as we continue forward towards 2025; "Timing, content, interaction, data-driven. Its all about the data".

One respondent data defined marketing and platforms as one in the same, when initiating their view on the 2025. "We will use all relevant platforms for marketing and communicating with customers, suppliers, staff, and investors. Most likely fully automated logistics, where only human touch is creating the content".

With the development of new platforms, statistically some will undoubtedly fall by the wayside- "Who uses FourSquare any more?". And what happened to MySpace Friendster or any of these lower budget applications people were using along the way. Gone and forgotten, but their existence helped pave the way for new and exciting advancements to assist the restaurant industry and beyond leading up to 2025.

"Look into WECHAT, developed by the Chinese has made tremendous value out of this packaged social media technology. It enables consumers and their friends to all view, share and experience the momentarily ".

Question 15. How will big data affect restaurants and their CRM systems?

Interviewees respond to this question is relative to the access they actually have with their personalized systems. One way to look at this is to say that some of the information pertaining to their use of CRM systems is a bit above their pay grade. Meaning, they only know the full capabilities of their use. Customer Relations Systems have evolved through the advancement of computers, applications and programming efforts. Now with the introduction of big data processing capability, Machine-learning algorithms are now being integrated into analytics and CRM platforms to uncover information on how to better serve customers. So the knowledge our respondents have to forecast these systems over the next decade is rather limited.

With that said interviewees collectively feel that it will assist in efforts to acknowledge customer requests and efficiency. "It will integrate even easier, accessing for marketing purposes and menu changes will be faster". "As the data grows our CRM will be more and more precise".

"Would be nice if there would be a database that would have gathered all the available data of different suppliers let's say within 500km from your location. Then you could easily search if you can source a certain ingredient 'locally', compare the pricings etc.".

Question 16. How do you see the role of technology in agriculture playing into the restaurant industry and would you consider using a system like in-house farming or vertical farming in your establishment?

"I love this idea, I would totally do this is space was available. I see this as a local sustainable food source especially for places with colder or dryer climates".

The data received from this question was extremely defined. The respondents seem to have spent a significant amount of time researching agriculture for their restaurants and how they will progress in the sustainability environment as well as becoming more cost productive during the next decade. People are very much involved in doing their little part to save the planet…

At the current moment, we are writing this in a hotel in Italy that grows all its own vegetables located on the properties garden- so old world is definitely meeting new world technology.

“I see it as an added cost saving investment. It would also serve our marketing, causing a greater interest in what we do. Farm to table is hot, especially if it’s a city space farming system”. “Looking to start a container production farm in Dubai by the end of 2017... Yes it will become more popular, once the technology is commercially ready”.

With the increase of population around the world, there is a serious threat to the environment and sustainability especially in places such as China and India. “Agro tech is very important to food supply as population increases. Right now we are having a major shortage of chicken wings and the price is being driven up. Chicken is a commodity that is traded, if more people want it, technology, and this includes hormonal to speed the maturity of the protein, continues to be critical to meet demand. My concepts will not be utilizing in-house farming, but I applaud those that do”.

“I think in-house farming is a cool idea but really time consuming. I would say working with a supplier is a much better way of doing it - so you get great ingredients from someone you know. It makes it nice to get good stuff from someone you like. Also that person can then focus on what they do best and have good customers. Win-win”.

I would love to have everything homegrown. In Finland where the seasons are so short it would be of huge value to be able to grow certain vegetables for the whole year in-house. Then again is this very organic or not”…

But again with every great idea or concept there is always something we need to be aware of; “Vertical farming, in restaurant-plantations, at this point we are concerned about the nutritional value with regards to artificial lighting and water based soils systems”.

Question 17. What would cause you to consider initiating a more technology in your establishment?

The initial response and data received points to technology assisting in a more structured, safe and efficient future, while also giving them a sense of gratitude that they would receive before online reviews and impetuousness. “FOMO, Improving the ability produce value for all stakeholders, removing mundane, low value tasks”. “Labor challenges. Guest demand. Safety of my staff and guests. Traffic driving indicatives”. “I think the impetus for any change is hunger. If business is down or competition is up, we’ll have to change with the times”.

At the same time restaurateurs are looking to establish technological advancements to assist with safety and savings, they also search for the mediocrity that served us all so

well for centuries before technology burst onto the scene. “The thing about restaurants is that they’ve worked as is for hundreds of years without technology. The core is still the food and the service at the establishment. It’s frustrating how there is a push for tech to enter this realm where it’s really an art form and a craft that does better without anything digital involved. But as customers become more demanding and more online, restaurants will have to adapt to their needs - even if those needs are non-food related”.

“It’s like the concept of a restaurant has changed from a place to eat and socialize to a place to get free Wi-Fi. People think they have the right to rate and review restaurants because they possess the skill of shoving food down their pie holes - when they have no idea what they’re talking about. It’s sad”. “I would be happy to be an early adopter in any kind of new technology so really no need for too much external pressure. Of course the solution would need to be rather inexpensive, easy to integrate and agile”…

“My dream restaurant is one that has no website - no phone. You just show up. No menu. The chef cooks. You eat. You pay. You get out, and you dream about it because it was so good and you had more than you expected and you had wine, and you laughed, and you saw interesting people not on their phones, and the ambiance was good and the lighting was just dim enough to see but in your memory everything is like a dream. And you go back - because you remember the server’s name and want to see them again and you want to eat, eat, eat whatever the chef has found that day. That’s what a restaurant should be now, in 2025 and in the future.”

And with the issues of safety, interviewees felt strongly about this with regards to their establishments; “The amount of attacks these days make bars restaurants and clubs a soft target for anything to happen. We have cameras everywhere, but we don't have facial recognition, this could be helpful in stopping a situation from occurring”.

5 Conclusions and Implications

5.1 Major conclusions

The research conducted, started primarily as a glance into the future of restaurants and the hospitality industry over the next decade with the premise of seeking out technology integration and turned into a journey of ideas, interactions, forecasts, analysis and thought-provoking conversations that gave us a very strong look into what's ahead.

It would be hard to imagine that the restaurant experience and execution of our own device could lead us to such a remarkable study of work. But though reading hundreds of articles, watching countless videos and speaking with some of the most successful, interesting and qualified professionals in the industry has been a ride we will not soon forget.

A concept we learned to reflect on through the process of our research was to look beyond the differences between reading a text literally, reading the text reflectively and reading the text interpretively. Even though you are reading the same information, depending on how you will use the content, the focus becomes varying. Today technology has allowed us the opportunity to processes information more efficiently than in the past but until Big Data and AI take full control of these areas we still need to detail the way systems should be integrated. Were it not for the outcome of technological advancements or innovations such as the social media movements, we would not receive a majority of the information we receive today.

Now that we have a cerebral understanding of the interpretations, definitions and descriptions regarding the level of technologies and the direction in which they will proceed, we can have a better idea of how this will fit into the restaurant industry. The glory of man has been built throughout time in the form of building, thinking and doing. And our belief is that is what we have delivered in this this work. It is a very broad subject to intertwine information the way we have and carve out a niche that will express itself in the coming years.

The majority of restaurant consumers today are self-sufficient, tech-savvy travelers who are comfortable using apps or mobile websites. So, restaurants and hospitality facilities will need to make sure their offerings are up-to-date and user-friendly. By 2025 the investment into technology will be so vast that all areas of our lives will be technology driven. For example, the use of robotics are already making their way as stewards in

hotels and Waiter-less and Chef-less restaurants are also popping up, so what will the percentage of human workers opposed to robotics or AI devices be within a decade. The needs to follow a variable explosion of trends over the coming years will surely give us an idea of where we are heading.

Questions that follow the phase “how will this effect professionals and what will restaurants of the future look like” are prevalent to where our writing and work will take us. We will progress throughout the theoretical frameworks and educate the reader with the execution of already integrated technology systems, while establishing a presence of what is to come. The following technological advancements will be investigated but are not limited to our research:

- Robotics, Artificial Intelligence (AI)
- 3Dimensional Food Printing & Food Technology
- Digitalization
- Social media
- Cloud computing
- VR/AR – Virtual Reality / Augmented Reality
- Systems (POS, etc.)
- IoT - Internet of Things
- Automation (Automating Communication with bots)
- Smart Sensors and Sensing Technology (reads environment and acts on it, e.g. air purifier)
- Big Data Analytics
- Cyber security

We have heard it all before, that “the world is more connected now more than ever” but to move a step further into the future, **as Dr. Michio Kaku, professor of theoretical physics at the City University of New York and author of “The Future of the Mind:” states** “In the next 10 years, we will see the gradual transition from an Internet to a brain-net, in which thoughts, emotions, feelings, and memories might be transmitted instantly across the planet.

To get an even stronger distinction of where we are heading through one demographic group, according to the Cornell Center for Hospitality research; Millennia’s (those ages 18-34) are expected to represent 50% of all travelers to the USA by 2025. This group alone will allow for an enormous amount of coddling as they live for self and instant-gratification as opposed to previous generations that invested in their future like baby-boomers.

Aside from the research administered, the “qualitative research interview” administered to the professionals of the industry allowed us to feel for how they see the restaurant and hospitality industry through the effects of technology. Their insight and deliberation delivered a data analysis study that we combed over for a full week. Due to their diverse positions and platforms, information could be used in foresight, history, alertness and integration of restaurants.

Technology is changing, markets are changing and while we have looked at the Internet as a vessel that has transformed the world, we realize that there are no real limitations. Information alone is not enough as human behaviour will changes as technology grows and enters the way we work and live. To end this on note that will reflect everyone’s thoughts; "The question we need to keep asking is, simply, what is technology setting us up for over the longer term?" Says Maguire…

5.2 Implications for Education and the Hospitality Industry

The future of studies is a phenomenon that grips us and demands we continue to learn from the time we begin to understand the meaning of education. In any discussions of educational growth, it is always inferred that learning techniques should be developed and expanded upon. The main question here is what are the implications and consequence of our study. The answer is quite simple; for the reader, student or professional to think constructively about how the future of technology will integrate with restaurants in the next decade and how they can get in front and gain from this occurrence.

There is no other way for the reader to be more involved with this topic than to really get out there and expand on what we have already defined. The trends materializing now will continue to explain the forward direction of the industry, while the next significant break-through dominates the headlines.

All we can say is- read, anticipate, elaborate and continue to focus on areas you feel will clarify your life’s work. Our journey started in early 2000 when we decided to enroll at Haaga’s Bachelor Programme in Hotel, Restaurant and Tourism Management and has lead us on a path through entrepreneurship in restaurants and catering companies, employment in some of the worlds largest corporations, the management of events and festivals, travel throughout the globe and back full circle to the furthering of our education. It has not always been an easy road, but the moments and process have made the road worth it.

So in terms of implications, there is nothing more profound than work that sustains you while enjoying the benefits of your labour. What we feel our work has provided, especially through the theoretical labour we have endured is a sense of urgency for the reader to meet with and interpret for their own use. The industry is so intuitive to new and creative ideas that the forecast will be synthesized by a series of elementary consequences. The methods that will determine the future of communication, empathy, social interaction, will undoubtedly change over the course of the next decade, but the learning process will never end.

We see the future of universities becoming more open and fluid to variable subjects pertaining to technology, trends and hospitality as a whole. For example over the last 20 years there have been a series hospitality structured courses that translate into degrees, such as sports education, event management, golf greens keeping for a short list. So the future looks to keep expanding on these areas of educational growth and we should continue to reinforce the process as we see fit.

5.3 Ideas for Further Research

To believe this writing and study will end at this point is to not understand the journey at all. This is a lifetime of work whose wings are passed from generation to generation from the poor farmers who worked the land day in and day out, to drivers that haul the food to locations far and wide, to the bustling waiters and waitresses who work tireless shifts to go home with just enough to scrape by. The owners, creators, and the chefs who change the way we look at what we eat and how it should be eaten. In a word this is just the start of an industry that feeds, loves and honors mans feast for life. The future is a place that will continue to grow through trials and tribulations as it always has, but hopefully it keeps the same insight on being hospitable that it always has.

The research for the future will most appropriately pertain to technologies overall exposure and how individuals will react to this. We believe a more sociological study will have to be done and will be done to assert peoples truest feelings on the subject. From what we have uncovered during our work we see that the majority will accept this and acknowledge its presence warmly and openly. If you look at the Medical Industry alone you observe an incredible sense of urgency to have technology assist in treating everything from the common cold or flu to hopefully finding a cure for the diseases that have plagued us for centuries.

The idea that we are accepting technology is a great thing, as we feel that restaurants should run with more efficiency and a stronger safety standard that will play a major role in

adjusting how the work is executed. However, it's one thing to ask industry professionals and business proprietor for their opinions, since their expectations are driven more by monetary influence and may not always be a guideline for the overall emotional effects which leaves us to create more robust data driven interview process for the everyday consumer.

Further research that could be adapted by our work could be seen in the form of classes that integrate the instruction for social media platform marketing and advertising directed at consumers and their emotional expectations. Most people love to travel, be pampered, and live luxuriously. So why not build on this area of sociological and emotional growth with the assistance of technology based algorithms that will no doubt be run by Big Data initiatives and an AI assisted force.

And with that, we conclude our study and hope you enjoy the work we have amassed throughout the last year. It has not always been an easy journey, but due to our research we are definitely more aware of how we should be preparing ourselves for the future.

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