AI in Marketing
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Week 2
Lecture-10 Transforming Marketing Strategy using AI (Part IV)

Welcome to this NPTEL online certification course on Artificial Intelligence in Marketing and now we will talk about module 10. That is, we are discussing Transforming Marketing Strategy using AI. And this is part 4 and in module 4 we are talking about part 4 of Transforming Marketing Strategy using AI. And to have an overview of this module, we will explore the strategies for scaling AI. Then explore the possibility of automating strategic planning using AI.

Then we will understand the framework for AI strategy as part of IT strategy and understand how AI transform marketing realities. Thereafter we will understand how AI capabilities are different than the existing IT department of the firm. Then we will study the competitive strengths in the age of AI. How AI is changing core competencies of firms. Understand how AI is changing strategy and competitive advantage. And then we will understand how to use AI. Now let us start with scaling the AI. Once AI development matures within an initial domain and organization get well versed with re-imagining parts of the business, AI adoption can be expanded to other domains.

So that is how this scaling of AI happens. That technology foundation they have built and the skills they have learnt. For example, how to successfully breakdown silos, make decisions that you use to take weeks in hours and create more data driven teams will help accelerate their efforts in the new domain. Companies can pursue multiple domains in parallel and prioritize domains that have data and skills in common such as the supply chain and logistics. So, there can be different domains or there can be domains which have something in common. Or they might pursue the same domain in other business units. The idea is to build off the past work. So, they can also be used in other businesses but on the whole the underlying idea is that you are to build on past work. These companies have created a playbook of methodologies and protocols they can turn to again. As they move on to other domains, their pace will quicken. Their AI capabilities will rapidly compound.

Scaling up AI involves four steps. The first step is to identify an area where AI will make a big difference reasonably quickly and there are multiple interconnected activities and opportunities to share the technology. The second step is to staff the team with the right people and remove the obstacle to their success. The third step is reimagining business as usual, working back from a key goal and then exploring in detail how to achieve it. And

the fourth is support new AI based processes with organizational changes such as interdisciplinary collaboration and agile mindsets.

Where to use AI? The choice of target areas of the business where AI can be used will depend on the following factors. The first of them is the potential impact. The chosen domains should be large enough to significantly improve either the company's bottom line or the customer's or employee's experience. Second is the interconnected activities. Promising domains encompass a clear-cut set of business activities whose recalibration can solve systemic problems like chronic inefficiencies such as lengthy loan approval times, high variability that is rapidly fluctuating customer demand and routinely missed opportunities that is difficulty getting products to the customers. The third is the sponsor and the team. In a promising domain, one can readily identify an internal business champion, dedicated senior business staff, a team of AI practitioners and a cluster of frontline users or knowledge workers. Drafting employees from across the domain lifecycle regardless of where they formally sat within the organization and giving them accountability for the work builds the engagement with an initiative and creates excitement and momentum.

The third is reusable technology and data. In a promising domain, the data and technology components necessary to run the AI models can overlap. It is much easier when teams don't have to start from scratch every time and can reuse data or snippet soft code that has already been prepared for the AI. The fourth is reasonable time. In a promising domain, the AI models can be implemented within a reasonable period of time. New projects can build off past ones, dramatically reducing development time and cost.

Now, let us look at how to structure the team that is integrated employees from different areas. The team responsible for AI initiatives within each domain should contain all the people necessary from business, digital, analytics and IT functions so as to design, build and support the new ways of working. Once domain teams know their objectives and are resourced, they will organize their work on their own using agile practices. The role of management will be to ensure that any employee moved on to them from other parts of the business are fully integrated and to remove any organizational barriers that might impede team's success.

Then comes reimagining business as usual i.e. identify key goals and issues. Getting the most from AI requires reinventing business models, roles and responsibilities and operational processes using new ways of thinking and working. Companies are best served by applying first principles or design thinking techniques and working backwards from a key goal or challenge. For example, firms might envision that a 5-star customer experience would look like and then explore in granular detail how they would achieve it.

The next is adopting for organizational and technological change and we are looking at interdisciplinary collaborations and prioritizing tech investments. While companies will need to update their tech to support AI, they won't need to do major surgery on their IT infrastructure or data architecture before they begin. Rather, companies can focus on technology that will enable and accelerate AI development and then triage additional investments according to the team priorities. Cloud-based data platforms and the use of APIs, microservices and other modern DevOps and other modern development operation practices, for example, can help companies develop new business capabilities two to three times faster. When prioritizing additional technology investments, the team should map out the capabilities, data and resources such as robotics, biometrics, sensors and connectivity platforms they will require and when and then chip away at each piece as needed. Teams should also consider the potential impact that AI initiative will have on upstream and downstream processes and implement measures to address it.

Now, let us look at this important question of how AI transforms marketing strategy. So, we will start with artificial intelligence strategy, and we are looking at this question. Is it possible to automate strategic planning using AI? For strategic planning, you refer to the earlier module where we talked about strategic planning in detail. Everyday progress in artificial intelligence is addressing tasks currently performed only by humans and there has been recent progress in strategic thinking developed by AI.

Even though it is not impossible to find evidence of use of AI for strategic planning, yes, AI is being applied to decision making of governments and corporations such as policy change index, the ML model of China's decision making. This task is not without challenges. Developing strategies in real time is hard and strategic plans can have multiple steps that need to be properly sequenced, and these plans can include contingency plans. AI as it is developed today is primarily programming, data gathering and mathematics. And even though ML based strategy generation is within reach, what does an automated corporate strategy look like right now? Rather than holistic solutions that model the whole company, the most popular kind of project today has limited scope requirements to model one part of corporate strategy. That is called for example credit risk models or the computer systems, customer segmentation, etc.

To build a system that generates strategies, a good starting point is to develop a simulator to define the boundaries of the world where the agent can play around and make the decision. So, we have to first determine the boundaries. The simulator also needs lots of data on past decisions and their outcomes in order to gain some experience. So, that is another difficult task. This process of building a simulator also involves deciding how much of the world to simulate.

So, for now if we have to answer this question can AI generate corporate strategy, the answer would be yes. But under certain constraints, artificial intelligence will be able to

generate corporate strategy. However, there is still far from reality and several challenges need to be addressed before AI could be employed fully to develop a holistic corporate strategy and not to some parts of it. So, still the AI is not able to develop a holistic marketing strategy or the holistic corporate strategy.

Given the current state of AI, even though AI is not creating the whole strategy, it has an important role in strategic decision making. Let us now take a look at frameworks for AI strategy as a part of IT strategy and how AI transforms marketing realities.

So, this is AI strategy as part of IT strategy. So, we have talked about the corporate strategy, business strategy in the earlier module. This information technology has two components, the digital business strategy and the cognitive that is the AI strategy. And then this comes the strategy plan implementation and the emergent strategy and all of them lead to a competitive advantage. So, now you see that corporate strategy plus artificial intelligence that is elimination of traditional constraints, blurring the lines that used to separate industries, changing rules of business competition, and transforming capabilities. Then we moved on to the business strategy, the strategy plan implementation and emergent strategy and now we have these new competitive advantages. So, when we marry the corporate strategy with artificial intelligence. So, when we are marrying corporate strategy and artificial intelligence, that is leading to a new competitive advantage.

So, competing in the age of artificial intelligence. How is AI transforming marketing realities? Many companies try to incorporate AI into their business strategy by determining what products, services and processes AI can enhance or inspire so as to sharpen their competitive edges. So far, we have discussed the adoption of AI with respect to such companies. That is companies that aimed at building a comprehensive strategy for AI and use AI according to existing business strategy. However, in today's age of technological advancements, a strategy for AI is not enough. AI is a major transformative force and has revolutionary impact on operations strategy and competition. AI technologies are different than existing technologies. For a very long time, companies have optimized their scales, scope and learning through greater focus on specialization. So, with specialization comes optimized scale scope and learning. This leads to a siloed structure that a vast majority of enterprises have today. Information technology did not change this pattern. Rather for decades, IT was used to enhance the performance of specific functions and organizational units. So, IT was being used for some specific functions and organizational units and to enhance their performance. But AI is different than IT. Traditional enterprise systems often even reinforced silos and divisions across functions and products. So, that was the problem with the IT systems. Silos, however, are the enemy of AI powered growth, which is leveraged by an integrated core of data and a unified consistent code base. So that is the problem with IT and AI.

So, they both are on the opposite side of the spectrum. So, AI leverages integrated core of data and a unified consistent code base.

Now let us look at how the core competencies are changing. So, this is for the traditional AI traditional firms, and this is for the AI driven firms. So, what does competition require? In traditional firms, it requires specialization. In AI driven firms, a universal set of capabilities in data sourcing, processing, analytics and algorithm development. The second is the core competencies. Traditional firms differ from industry to industry. So, in traditional firms, the core competencies used to differ from industry to industry. While in AI driven firms, the core competencies are shaped by data analytics and powered by algorithms all hosted in the cloud for anyone to use.

The third is the technological foundations, methods, and tools. So, in traditional firms, they used to differ amongst industries and sectors. While in AI driven firms, this is similar, and this is why Alibaba and Amazon are able to compete in industries as disparate as retail and financial services. So, that is the advantage or the disadvantage. So, companies like Alibaba and Amazon are competing across industries.

Now let us look at the changing competitive advantage. In the age of AI, competitive advantage is increasingly defined by the ability to shape and control digital networks. So now, this competitive advantage is based on the ability to shape and control digital networks. Organizations that excel at connecting businesses, one aggregating data that flows among them and extracting its value through analytics and AI will have the upper hand. So, any organization that is able to do these three things will have a competitive advantage. Human network effects and AI driven learning curves will reinforce each other, multiplying each other's impact. So, network effects and AI driven learning curve will reinforce each other and therefore they will multiply each other's impact. Companies such as Google, Facebook and Alibaba have become powerful hubs, firms by accumulating data through many network connectors and building the algorithms necessary to heighten competitive advantages across disparate industries.

Now let us look at how the strategy is changing. So again, we have these two, traditional firms and business firms. So, based on advantages like differentiation is based on cost, quality and brand equity and specialized vertical expertise. While in AI driven firms, business network position, the accumulation of unique data and the deployment of sophisticated analytics. So now you see how these advantages are changing from traditional to AI driven firms. You see that all of them are now redundant in this scenario.

Again, strategies in traditional firms differ from business to business while in AI driven firms look similar across diverse businesses. So now these strategies are the same across businesses. The industry expertise in traditional firms is crucial. But now this industry expertise in this AI driven firm is less critical as compared to it was in traditional firms.

Now let us answer this question of when to use AI. The complete strategic decision making has been a human task and business leaders often rely on their intuition for decision making. But with the rise of AI has exposed the flaws in traditional decision making and provides an opportunity to make more informed and foolproof strategies. Because humans have a limited capability for information processing. Therefore, this AI can help in making more informed decisions and foolproof strategies. This necessitates executives to disrupt their existing decision-making style to fully exploit AI capabilities. So now these executives are facing this disruption in how they were, they are making the existing decision making.

They will have to temper their convictions with data, test their beliefs with experiments and direct AI to attack the right problems. While AI is superior as data intensive prediction problems, humans are uniquely suited to the creative thought experiments that underpin the best decision. So, when we have this data intensive prediction, AI is fine. But humans are best suited for these creative thought experiments that underpin the best decisions. A key to effective collaboration is to recognize which parts of a problem to hand off to the AI and which the managerial mind will be better at solving. So, what decisions AI and what decisions human? So that is the question.

The key for decision makers in optimizing their work with AI then is to recognize which sorts of problem to hand off to the AI and which sorts the managerial mind properly disrupted will be better at solving. So now the decision makers have to determine what problems should be given to AI and what to the human. The work of the acclaimed computer scientist Judea Pearl provides a guide.

Pearl famously conceived the ladder of causation which describes three levels of inferential thinking that for our purpose can provide a roadmap for self-disruption. As pearl notes in- "The Book of Why? The Science of Cause and Effect", No machine can derive explanation from raw data. It needs a push.

The first rung of the ladder is inference by association. So, that is the first thing. Inference by association, i.e., if A then B. The second is inference by intervention. So here it is association and here it is intervention. If you change input X what happens to outcome Y? And finally, the third one is inference by applying counterfactuals. That is non-intuitive constructs that seem at odd with the facts and that lead to novel insights.

Now let us look at the first one association. Association involves examining the correlation between two variables. When we raise prices what happens to profits? AI is exceedingly good at shifting through vast quantities of data to uncover these associations. For instance, social networks use associative algorithms to predict which post will attract the most views on the basis of the user's previous behavior. Humans are not very good at this, being both slower and offer more subjective biases. As a result, executives who

make decisions on the basis of intuitive associations alone can reach flawed conclusions about this cause and effect. For example, wrongly assuming that a certain action leads to desired outcome. So, AI would be more suitable for this task.

The next is intervention. Intervention is the process of taking an action and observing its direct impact on an outcome. In essence, manipulating an experimental variable. Business decision makers do this all the time. For example, they might adjust a product price and then measure the effect on sales or profits. But they run into trouble when they are overly confident about a predicted outcome. So, that is the problem here. Effective intervention requires being willing to test a variety of inputs. Even counterintuitive want to see how they might change the outcome. Here humans have an edge over AI.

The third is the counterfactuals. The concept of counterfactuals is beautifully captured in the classic film It's a Wonderful Life in which the angel, Clarence reveals dark alternative reality to Jim Stewart, the world as it would have been had he never been born. Counterfactual inference involves the creative act of imagining what might have happened had a certain variable in an experiment. Or in our case, a business activity being different, giving something else we know. Although without a time machine, it is impossible to test a true counterfactual to a previously executive decision making, you can seek out evidence of what the counterfactual reality might look like. This evidence requires a level of creative imagination which is impossible for AI to implement. Although AI can help with simulating an alternative reality, it would require massive amounts of data which are not always readily available and sometimes impossible to gather as the phenomena has not really taken place. So, from where all that data will come.

Now let us look at the understanding the role of humans in effective use of AI. AI is a powerful decision-making tool. But if performance is the endgame, leaders and other executive decision makers need to rethink how it is best leveraged. That does not mean handing decision making over to the machines. Rather, it requires decision makers to focus on the creative, interventional, and counterfactual thinking that humans are uniquely good at while relying on AI to do the data intensive predictions and association task at which it truly excels.

Competing in the age of AI. Conventional approaches to strategies that focus on traditional industry analysis are increasingly becoming ineffective. Take automotive companies for example. They are facing a variety of new digital threats from Uber to Waymo, each coming from outside traditional industry boundaries. The advice to executives according to traditional strategy management would be to stick with businesses they knew. In industries they understood.

However, synergies in algorithms and data flows do not respect industry boundaries. Organizations that cannot leverage customers and data across these boundaries are likely to be at a great disadvantage. Instead of focusing on industry analysis and on the management of company, internal resources strategy needs to focus on the connection firms create across industries. That is where strategy should focus and flow of data through the networks the firm uses. If auto executives think of car beyond their traditional industry context as a highly connected AI enabled service, they can not only defend themselves but also unleash new value through local commerce opportunities, ads, news and entertainment feeds, location-based services and so on.

So, in order to conclude, we have discussed strategies for scaling the AI. We have also discussed the possibility of automating strategy using AI. AI can be used to generate cooperative strategy, but it has some severe limitations and currently AI is largely dependent on human intervention for strategy. Then we discussed how AI driven firms have different core competencies than traditional firms. Traditional firms differ from business to business whereas AI driven firms look similar across diverse businesses. Then we discussed and tried to figure out which kind of problem frameworks should be solved by AI. Inference by association is best solved by AI and inference by intervention and counterfactuals needs greater human intervention. And these are the 6 sources from which the material for this module was taken. Thank you.