

Industry 4.0: Does Advertising Agency Ready to What's Coming?

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Abstract: This article aims to describe what is coming in the industry 4.0. Does it age of digital enterprising or just exchanging human capital towards artificial intelligence in everything. Secondary research applying to this article uses some reference to tell a story of what is industry 4.0 and what extends does it matter? Especially in terms of its impact on the future trend of the advertising business and on environmental sustainability. The story is divided into four parts. First is an introduction of how the technology evolves since the first industrial revolution to the fourth industrial revolution. Second, this article discussed what is mean by industry 4.0 that includes definitions, values, and business models that evolve due to that matter, also its impact on environmental sustainability. Third, this article shares about what the industry should do to adapt the technology but also care for environmental sustainability. Fourth is the critical summary of what to do next since technology will continue to evolve, and ready or not, the industry must change and adapt to prevent extinction. This article contributes to existing research in advertising studies, especially the one that is related to the revolutionary industry 4.0. The finding of this study provides an overview of how the advertising industry should face industry 4.0. This shall provide input to practitioners, what to do next to improve their readiness to the revolutionary industry 4.0. This study is limited by time. Therefore future studies are needed to expand the results of this study into the broader scale.

1 INTRODUCTION

In the past centuries, four industrial revolutions have occurred. It all triggered by insatiable customer needs of the actual level of technology that is result in rapid movement of transportation and communication. The first industrial revolution has started with the appearance of steam engines and the mechanization of the textile industry at the end of the 18th century, while the second industrial revolution was initiated by electricity and internal combustion engine and this is also the era when mass production technologies appeared (Agy, 2018).

The third industrial revolutions occur in the middle of the 20th century when computers have led us to even more excellent production by simplifying the production process using the automation and robotization to suppress the production cost. And nowadays, we are facing the fourth industrial revolution. The term was first used in German High-Tech Strategy 2020, which refers to the possibilities of digitalization, robotization, automation and

network operation that make modern life more accessible.

The fourth industrial revolution is also known as a cyber-physical age. The age where data related to our daily life and activities are integrated in the Internet of Things (IoT). Most industries think that this fourth industrial revolution will enable mass production more efficient and flexible, in order to shorter time to market. In the end, it will benefit the industries. Even so, industries are still working to find out how to use and explore the potential benefit of this fourth industrial revolution.

The Internet of Things (IoT) consists of devices that can sense several aspects of the real world such as temperature, light, sound, touch, or any other related aspects and report such real data or act on it. IoT is considered novel technology, and currently, it is gaining ground rapidly because it has the capability of enabling the integration of several collaborative and communication technologies. IoT comprises a wide range of products and services, focusing on sharing data across the Internet. The main basis of IoT is information transfer. The

transferred information being used or accessed by its user will be beneficial to people from professional level to everyday life (Igor JurCic, 2020).

The growth of the Internet of Things is one of the fastest growing trends in technology. It is estimated that in 2022, IoT will have an impact on the global economy of around \$ 14 billion. In its process, although the internet of things is revolutionary, business experts see the intervention of all members of society as crucial, especially by entrepreneurs. Large companies mostly tend to lay the foundations of technological infrastructure, but in reality entrepreneurs is the one who promote and drive the most innovative ideas. The Internet, in particular, has changed the way people communicate and conducting their business, so it technically increases the productivity of the population. It can be trace by several ways, firstly with the reduction in transaction costs (Caron et al., 2016).

The new industry 4.0 along with the growth of internet of things has brought many changes to many industries. At first, we expect some transformations happened in ICT related industry, but it turned out that so many industries affected by this phenomenon. The advertising industry is one of the affected industry. As one of the most dynamics industry, the advertising industry must evolve to response and to thrive now. To be sure, full advertising agencies in the world that do marketing consultation also have to evolve their operating models. Advertising agency back-office management have been centralized in shared service centers, IT and finance, followed by functions such as treasury, tax and law in some cases. Now, human resources in advertising agencies generally weaken gradually except for human creative resources because their creativity makes distinction between one agency to another.

The production department has experienced many evolutions in recent years, since agencies have the challenge in collaborating each of their creative ideas to support a pitch that in the end will be finally put together in the form of a "unified storytelling." For example, Omnicom announced in April 2014 the integration of various production departments into an entity called EG+ Worldwide. This entity will provide a client-focused production network and highly personalized execution. EG+ was formed to be a leader of the implementation the latest technology in applying, strengthening and localizing creative brand concepts in all media such as motion pictures, digital media and print (Pattheeuws et al., 2017).

While agencies may unite their services, general practices such as account planning and creative services are not combined across agencies except for the highest-level accounts. In such cases, a multidisciplinary global account structure has been established in the parent company level to support collaboration and coordination between "horizontal" cross-agency teams. In addition, in marketing there are fundamental changes from customer mapping, innovation in the platform, social influencers, and thus allowing experience to happen with exponential results. It is one of the most exciting time for marketers.

But, there are more to be explained as the changes maybe different among agencies. Therefore, this study aims to examine the readiness of advertising agencies, particularly in Indonesia, of what's coming in industry 4.0.

2 METHODOLOGY

Using secondary research this article uses some reference to tell a story of what is industry 4.0 and what extends does it really matter? Especially in terms of its impact on the future trend of advertising business and on environmental sustainability. The study's results will be presented in four major parts, which is: 1) introduction of how the technology evolves since the first industrial revolution to the fourth industrial revolution; 2) what is mean by industry 4.0 that includes definitions, values, and business models that evolve due to that matter, also its impact on the environmental sustainability; 3) what the industry should do to adapt the technology but also care for the environmental sustainability and 4) key summary of what to do next since technology will continue to evolve, and ready or not industry must change and adapt to prevent extinction.

3 RESULTS AND DISCUSSION

The fact that the Industry 4.0 concept comes from Germany is not entirely surprising, due the fact that Germany has been named as one of the top leader in the global manufacturing industries, even historically and currently known as top leader in manufacturing equipment sector. Industry 4.0 deliberately became the German government initiative to supports development of the industrial sector. Therefore, it is safe to state that Industry 4.0 can be seen also as an action of Germany to

sustaining its position as one of the most influential countries in manufacturing the automotive and machinery. The Industrial 4.0 basic concept was first introduced to the world at the 2011 Hannover fair (2011 Hannover Messe). Since its introduction, Industry 4.0 has been in research, academics journal and industry talks at many occasions. The industrialists want to exploit as much as possible the potential of new technologies and concepts such as: 1) The improvement of the Internet of Things; 2) Integration of technical processes and business processes in the company; 2) Digital mapping and real world virtualization; 3) 'Smart' factories and their effects on the efficiency of industrial production (Rojko, 2017).

Industry 4.0 is an era where materials and machines are connected to each other on the internet of things (IoT), many objects have network connectivity, making it possible to send and receive data. This allows mass production to be very flexible and resource friendly. This is driven by market needs for increased flexibility, asset efficiency, and shorter time. The industry 4.0 is also known as digital factory. Because in contrast to Revolution 3.0 that focused on the automation of single machines and processes, Revolution 4.0 very much focuses on creating a digital ecosystem with value chain partners, creating end-to-end integration of all physical assets and also to seamlessly generating, analyzing, and communicating data. Machines in Industry 4.0 mostly are Cyber-Physical Systems, which integrated with ICT components. The autonomous systems induced with internet of things enable machines to make their own decisions based on machine learning algorithms and real-time data capture, analytics results, and recorded successful past behaviors.

3.1 Industry 4.0 Framework

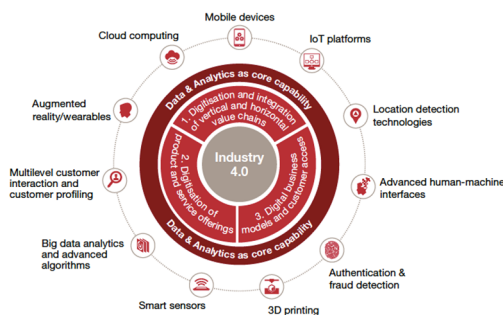


Figure 1: Industry 4.0 framework and contributing digital technology

There are three indications that drive the emergence of industry 4.0 as shown in Figure 1:

3.1.1 The Vertical and Horizontal Value Chains Digitization and Integration

Industry 4.0 enables digitization and integration of various processes vertically throughout the organization, from development, manufacturing, logistics, product purchasing, to customer service. Every data are available real-time such as operations processes, efficiency and quality management, along with planning, it is all held by augmented reality and optimized within an integrated network. Horizontal integration expands from operation in the internal like suppliers to customers and all the stakeholders. It comprises devices that can track and trace in real-time and then using integrated planning for execution.

Other than that, Industry 4.0 also revolutionizes the companies's portfolio in product and service for the sake of satisfying customer needs with method that is highly cost-effective. Businesses will have to be capable in responding immediately to market environment changes and requirements of their customer in order to guarantee that customers get better flexibility and therefore, better services. Usually, chain agility in better supply could mean shorter process time and more flexibility in service, but it could also mean more stores in need and higher end to end supply chain costs.

Industry 4.0 implementation gives the upcoming inventories and demand demand a better visibility through the chain of supply. By using actual information on site, volume, portfolio and procedures throughout supply chain, the company can give better reaction for customers' needs. This shared-information sharing can enable the integration of supply chain such as acceleration the response from upstream suppliers to downstream logistics providers, decrease inefficiencies and improving the service in the chain of supply (IIPSI, 2015).

3.1.2 Product and Service Offerings Digitization

Product digitization consists of developing existing products such as by adding smart sensors or using data analysis tools alongside communication devices, and new fully integrated digital products creation. By integrating new data collection and analysis methods, companies can get information about their products from customers and improve

products to fulfill the growing needs of end customers.

There has been recognition increase in the last 20 years that the distinction between a physical product and a pure service are somehow blurring. The IoT Technology can provide greater congruence to products with cyber-physical characteristic. Like offering better opportunity to replace the purchase of a product with a service. For example, HP Instant Ink use subscription-based business model. The new model granted the user the ability to print a number of pages per month for an agreed package fee, it is guaranteed that there will never be a case that printer run out of ink. The usage of ink and how much pages were printed are smartly monitored through the printer that enabling IoT system. In this model, the customer still buys the printer, but the actual printing is called a service. With this model, HP offered a very clever win-win solution as customers were offered a very efficient way to use printer and HP Company can get better visibility information regarding its demand in the market, building direct relationship to the consumer and in the end it will led them to more steady income. The model also has a really big potential to the environmental benefit due to integral part of the business model is recycling the ink cartridges in a closed-loop.

But, challenges is still there as there are customer's choice, and while many customer may be content with the availability of subscription based services, many customer will resume favoring ownership of a physical product. It is important for industries to be mindful of every single opportunity available as there is not even single right answer available. Just in case, HP still sells conventional printers and ink, as well as running the Instant Ink subscription service. To see the most possibility that cyber-physical age brought, it is vital to considerate in opening up a new potential.

3.1.3 Business Models and Customer Access in a Digital Way

With providing disruptive digital solutions such as complete integrated platform solutions combined with data-driven services, leading industrial companies can expand their offering to its customers. In the disruptive digital business models, the companies often focused on generating additional revenues in digital and enhancing their customer interaction and access. Digital products and services frequently look to serve customers with complete solutions in a distinct digital ecosystem.

The Industry 4.0 giving the opportunity to advance the business models that already existing. For example, the retailers that do business by catalogue now can grasp the chance to do online business. Opportunity that industry 4.0 gave is somewhat of revolutionary. It can be traced by the initiation of platforms that could fulfill demand and supply in gloriously new way is disrupting traditional markets. Great examples include Grab, Gojek, Traveloka, Tokopedia. It is highly serious for businesses to ensure that they have business model, which is always on the leading note and refreshed regularly by bringing up every creative ideas. Therefore, by considering the opportunities that Industry 4.0 presents in terms of evolving a new business model is a prominent way to identify impending threat of new disruptive competitors.

The Internet of Things (IoT) is considered as an ecosystem containing smart objects that equipped with sensors, networking, processing technologies integrating and working together to provide an environment in which smart services are taken to the end users (Asghari et al., 2019). The Internet of Things (IoT), also called the Internet of Everything or the Industrial Internet, is a new technology paradigm planned as a global network of machines and devices capable of interacting with each other. The IoT is recognized as one of the most important areas of future technology and is gaining massive attention from a wide range of industries as it is one of the technologies that the Industry 4.0 has greatly relied in. The true value of the IoT for enterprises can be fully realized when connected devices are able to communicate with each other and integrate with vendor-managed inventory systems, customer support systems, business intelligence applications, and business analytics, making its importance in future technology (Lee and Lee, 2015a).

Today, the internet has became one of the primary needs of human civilization. More than four billion people are using the Internet as part of their live like using internet for communication, do google something for some enlightenment, or to actively use social networking to get in touch with others or any other activities. As the time goes on, a lot of people have accessing to the vast information that internet makes available. Internet making it possible for gadgets and smart devices to connect, communicate, coordinate and compute with each-other. Now, the Internet has grown to be huge web of networks with even more valuable information and service made always available. It makes easier for developer to introducing newer methods of working, newer methods of communicating, design

newer applications, newer methods of entertainment. Hence, making lives easier with newer ways of living (Mehta et al., 2018). But, the Internet is still growing, so within the next few years it has become something else in its place in human civilization.

With The Internet of Things, the technology turning out every day physical devices to smart objects increasingly blurs the barriers between the real and cyber worlds. This is a huge and fundamental shift. When we start making things intelligent, it is going to be a great engine for creating new products and new services to improve people's everyday lifestyle, spawn new businesses and make hospitals, factories, roads, airways, offices, retail stores or other public buildings, going smarter (Ouaddah et al., 2017).

The Internet of Things (IoT), though it can solve problems and create opportunities for a variety of entities, it may create new problems and raise concerns and associated costs, such as those pertaining to privacy (Weinberg et al., 2015). The Internet of Things, an emerging global Internet-based technical architecture facilitating the exchange of goods and services in global supply chain networks has an impact on the security and privacy of the involved stakeholders (Lee and Lee, 2015b). The Internet of Things (IoT) heralds a new era of computing whereby every imaginable object is equipped with, or connected to a smart device allowing data collection and communication through the Internet (Caron et al., 2016). Looking on technology acceptance model (TAM), the IoT acceptance model that possible to implement consists of three technology factors (perceived usefulness, perceived ease of use, and trust); one social context factor (social influence); and two individual user characteristics (perceived enjoyment and perceived behavioral control) (Gao and Bai, 2014).

3.2 The Industrial Revolution in the Advertising World

Leveraging the IoT for firm benefit involves revisiting certain ideas that may have gone unquestioned for a long time. Many advertising agency revisiting their certain ideas of how they work and found some unquestioned trouble for a long time, with the challenges that coming in their way and the way Industry 4.0 has present some new opportunities for them it is their time to evolve their business into making new business model that disrupt the industry.

The rapid development of much more integrated business operating models in which global advertising agencies is to do the role of strategist actively far from before. In agency governance, the back-office contributing in revolution brought by Industry 4.0 typically tactical in nature, not strategic, in order to maintain long-term sustainability. Transactional back-office activities are mostly to be moved into global shared-services organizations. These back-office role involve functions in finance sector like liability, payroll, and invoice, and other transactional HR services, development, and/or nonstrategic IT services. Maintaining a country or even regional governance to support agencies role in serving each market is possible to create efficiencies. It is known that the talent management is perhaps most critically hit by the revolution because the Industry 4.0 disrupt the integrated talent management that already have been there for years and as tech talent is most prized talent right now, many agencies are suffering from losing their key talent in creative or in IT field to tech companies.

Besides that, the production services in middle-office category greatly affected by the Industry 4.0 because so many different market dynamics happen here, from creative area, media, also management. For instance, it is deem important that creative content is dangerously in need to create unique strategy for more across more media and platforms but it is done mostly without additional budgets. As a result, there are increasing competitiveness coming from agencies, even with clients themselves. Clients are increasingly asking for cost transparency, visibility into production supply chains, agency-vendor relationships, and demonstration of careful stewardship when working on client budgets.

All this call for the consolidation of agency production services to produce demonstrable efficiencies in production through price normalization, project bundling, talent resource management, volume discounts for commodities, and consistent client reporting and analysis (Pattheeuws et al., 2017). In short, the structure and priorities of advertising agencies are changing. Moreover, there are three new ways of advertising as result of Industry 4.0.

3.2.1 Programmatic Advertising

A programmatic scenario in the advertising industry includes advertisers who want to display ads and who are willing to bid for them, an automated bidding system (Exchange), and serving the ads to the right audience. In other words, instead of calling

a salesperson on a particular website, the industry can use a system that receives information about available ad space from hundreds of thousands of websites and applications and suggests that you bid on those sites to display your ads. Programmatic systems can be very sophisticated and monitor users by activity, device type, when they browse, websites they have been to, and more. The entering process takes place in less than a thousandth of a second.

The power of big data consist of gathering, connecting and interpreting, automating and exploiting every data in the internet, then together with more qualitative and creative insights it is used to create strategy out of customer immersion and focusing, engaging, customizing, delivering, supporting, and "design thinking" for what to do with them. The most important about big data power, is its ability to keep learning, about people, and decide the best strategy for best result.

The digital advertising ecosystem makes it possible for advertiser to try to track user activity across the Internet and across devices as means to identify their target audience and do inform the advertising delivered to particular users in a personalize way. Many will be familiar with cookies and device advertising identifiers. Cookies, are unique text files stored in a browser that allow a company like advertising agency or any other marketing consultant to identify the target by accessing and tracking their website history (Asghari et al., 2019).

3.2.2 Digital Advertising

Digital advertising method has lowered media costs and made for advertiser to reach as many people as they can. In the UK during 1980s, it was common for the most watched TV shows to attract average viewing of over 20 million viewers. Nowadays, it is extremely remarkable for a televised show or event to attract 12 million viewers or more than that number. However, in the USA the most known televised event, the Superbowl American Football final can reach 100 million viewers. In the first sight it seemed like astonishing number for advertiser, but then the advertisement that appear in many commercial breaks is highly expensive to buy.

The situation is not very different in radio industry. As far as we concerned, the popularity of radio is slowly going down. In the past, popular radio station such as BBC radio once known as one of the primary source of information and entertainment for larger audiences. Today, they have competition with digital radio stations that aim for

the largest slice of listeners with specialized format in the form of commercial revenue. These changes in the media landscape have major influences to the advertisers. This change is contributed to the emergence of internet as the main resource for consumer about a brand that once shared through mass media like TV, radio, or printed. The once commercials ads that shown in TV now can be advertise in Youtube with less cost and more actual tracked ROI and so with social media(Ford and Merchant, 2014; Hackley, n.d.).

The importance of strategic for audience segmenting, targeting and cost-effectiveness in media planning has been a challenge for advertiser. The strategy of media planning now being highly relevant for the advertising strategy as the greater media impact has grown. Prominently, the account service people and media planners can no longer easily classify their target audience by external and also unclear indicators like age, sex, social class, or spending power. Instead they have to start thinking with target's point of view. From lifestyle choices, brand consumption, communities they involve in, media that they consume everyday, and its implications in their lives. Using big data that stores everything related to consumers that collected trough the ecosystem of Internet of Things can solve this. The account service people and media planners now can start making persona based on information that gathered from big data.

New media is still a term used in media landscape even though most media in this category are no longer new. Now, it is very common for brands to create a special website, to offer a web-based retail interface, and engaging consumers via social media as part of advertisement of their products. The potential for marketing communications with targeted coverage, theme, and media selection is clearly attractive to advertisers. New agencies specializing in social media management are emerging, using the reputation of social media and its ability to target more accurate consumer groups and attached them with direct-response potential tailored messages in real time trend.

Consumer's pressure for through-the-line communications integration is changing the priorities of agencies that for once usually focused in above-the-line media. The importance of media agencies is highlighted because of the need for integrated media solutions have increased. As a result, many of media division that has been years once part of advertising agency, become separate businesses entity with more focusing work on

media. Furthermore, the once part social media division is also emerging as a single entity to cater the need of brand in terms of fame.

3.2.3 Modern Advertising

Modern advertising trends are changing in constant. Mostly the changes driven by technology advances, advertising media is becoming broader in terms of reach and it can be done with less budget as it ever been before. The Internet has turned it space into advertisers low-cost playground. Advertising campaign with email is way cheaper for advertiser to spend money rather than traditional print campaigns that is known for its costly price and its environmental impact. The Internet also allows a more direct and targeted approach to advertise. In the email campaign, creative can conjured as creative direct message as possible, resulted in a less formal and more personalized alternative message to traditional direct mail campaigns.

Beside technology driven changes there are changes on how people look at a brand. Brand reputation and identity are now built by the customer's reception when personal interaction with the product happens, the product experience can give great impact. This personal interaction that they experience is coming from the collaboration of the product, customer services and other communication mediums offered to interact with the brand such as help desks, suggestions boxes and technical support.

People only wanted to participate with brands that have connection about them, brands that echo their goals or shared values, and even brands that connect them with other people who share their values and goals. Brand stories are living tales, created by the company that produces that brand, but it is the people who interpreted and spreading it via word of mouth. Content must be real time and relevant, and keep moving forwards.

An excellent example is Carhartt's hand-made video campaign featuring Jason Momoa, its story tying the glorious Hollywood reputation to their Midwestern farming roots, Pacific Northwest loggers, mechanics and families around the world vision (Jason Momoa, 2017). Carhartt shows the personal side of their products and how they haven't changed from their original dedication to durability in tough situation by using Momoa's personal story and images of his family at play with their products featured in all states of repair, It wonderfully connects the products to a wide range of environmental cause and (Fisk, n.d.).

Instagramers or Youtubers who they trust replaces word of mouth in a digital world that once led by public relation and celebrity endorsement. Brand stories, advocates, and community building help to guide and shape this influence as they feel they had connection to certain Instagramers or Youtubers.

3.3 The Industrial Revolution in the Advertising World

The world face many social issues and environment-related issues, such as global warming, as well as human rights violations that are found in some countries. Many of the issues has come to be responsibility corporate because it activity in doing business have a hand. The advertising industry being no exception, the industry has to persevere in their effort to manage the impact on the environment and society.

It is common knowledge that advertisements have a substantial influence on consumer behavior as it persuade people to purchasing of such goods as daily consumer items, and even often leading them to once-in-a-lifetime major purchases. Although being aware of the enormousness level of the impact that advertising has on consumption, the industry also have major duties in terms of the fairness of the information content and of goods and services that consumers purchase. Looking forward, the role that should be played by the advertising industry is far greater than what had been anticipated. As it comes to environmental and social impact, advertising companies have both direct and indirect impact.

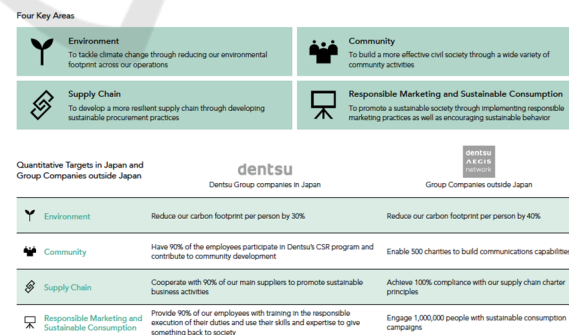


Figure 2: Dentsu's plan for supporting environmental sustainability

On the deliberations, Dentsu established a plan that outlines the mutual goal of the Dentsu Group in Japan and overseas regarding ways to realize a sustainable society, and through the promotion of sustainable business activities. At the September

2015, the Sustainable Development Goals (SDGs) were announced by United Nations Sustainable Development Summit as an action plan for humanity, the Earth and prosperity (United Nations Sustainable Development Summit, 2015). The plan comprises 17 goals and 169 targets. The Dentsu Group is contributing to the resolution of global social-issues by providing a various collection of value in the communications field. Dentsu are helping to provide support for stakeholder SDG initiatives by doing seminars and workshops. Just as shown in Fig 2, there are four key areas for Dentsu to focusing on: 1) Environment by reducing their environmental footprint across their operations to tackle climate change; 2) Community by doing CSR for the sake of building more effective civil society; 3) Developing sustainable procurement practices for more resilient supply chain; 4) Promoting a sustainable society by implementing responsible marketing practice (Dentsu Group, 2018).

Other than that, Dentsu also created the SGDs Communication Guide for their employees, as it is encouraging the employees to think more about their advertisement-related and promotional activities in connection with the SDGs. Furthermore, the Dentsu Group along with the world's several other top advertising and marketing services groups (IPG, Havas, Publicis, WPP, and Omnicom) is participating in the groundbreaking initiative called Common Ground. The Group is focused on Goal 3 in the SDGs, which is concerning health particularly infectious diseases such as malaria and tuberculosis.

3.4 What to Do next



Figure 3: Blueprint for digital success in advertising industry

Through Figure 3, there are several ways for advertising industry people to do in order to thrive in these challenges. First, mapping out advertising industry strategy in industry 4.0 ways, this include using more technology in utilizing daily work live and always be wise and aware while doing it. Second, create initial pilot project as means to encourage creativity. Third, define the capabilities

that need and act on it, learn more by doing some little task as an exercise. Fourth, become a virtuoso in data analytics to get better understanding in what's going on or may be happen in the future. Fifth, transforming existing operating model into digital enterprise. The last, sixth, actively plan an ecosystem approach by fundamentally rethinking organizational and operational structure to better serve clients.

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