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Digital Transformation for sustainability

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► **To cite this version:**

Solomon Darwin, Henry Chesbrough, Chiara Eleonora de Marco, Sea Matilda Bez. Digital Transformation for sustainability. [Research Report] World Open Innovation Conference (WOIC). 2018. hal-02434305

HAL Id: hal-02434305

<https://hal.science/hal-02434305v1>

Submitted on 9 Jan 2020

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“DIGITAL TRANSFORMATION FOR SUSTAINABILITY”

Takeaways from WOIC 2018 practitioner sessions

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Prof. Henry CHESBROUGH

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Research presented in this report is based on:

1. **Problem Submission:** Firms submitted corporate challenges relating to digital business models across several industries. Problems were screened and selected.
2. **Problem Framing:** Professor Darwin conducted individual sessions with individual firms to solicit input from both open innovation researchers and practitioners.
3. **Problem Solving:** Input, feedback, and recommendations provided by a community of academic experts and open innovation practitioners across industries who worked deliberated in groups of eight during a one-hour session per challenge.

Contribution Acknowledgement:

Rodrigo Morelli, *Open Innovation Fellow at the Garwood Center for Open Innovation*

Invited industry practitioners participating in solving the challenges:

IBM: Jim Spohrer, Director, Cognitive Open Technology

DuPont: Russell Rogers, Director, Global Innovation

Avery Dennison: Pradeep Iyer, Global Director & Research

Ericsson: Mallik Tatipamula, CTO Technology and Architecture

Mozilla: Eugene Ivanov, Director of Crowdsourcing

Philip Morris: Andrea Mills, Chief Advisor, Ext. R&D

Thyssenkrupp: Arding Hsu, Senior Advisor

BT Group: Jean-Marc Frangos, Managing Director, Ext. Innov.

Clorox: Sharayla Cleare, Open Innovation Leader

LEO Pharma: Niclas Nilsson, Head of Open Innovation

Sanyo Chemical: Takeshi Otaka, General Manager

SAP: Max Wessel, Managing Director, SAP labs

TechMahindra: Scott Dudley, Vice President, Digital Trans.

BBVA: Jamie Espinosa, Open Innovation Director

Coca Cola: Yu Shi, Sr. Director, Global Research & Ext. Techno.

Daimler: Sheherazade Benzerga, Digital Trans. Manager

Cisco: Pram Singh, Head of Platform and Partnerships

Xiaomi: Paul Lin, Vice President, Intellectual Property Strategy

Wipro: Nitin Narkehede, General Manager, Emerging Technologies & Innovation

Allergan: Lindsey Karberg, Vice President of Digital Immersion

Kaneka: Alan Walker, Vice President, Marketing & Development

Applied Materials: Ruchika Mehta, Growth Accelerator Lead, Office of the CTO

Zero Mass Water: Vinayak Gupta, Chief Operating Officer

US Cold Storage Inc: Sridhi Gudipati, Vice President and CTO

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Challenge #1: WIPRO

OI Fellow: Rodrigo de Oliveira Morelli

Academic Moderator: K. Greve, R. Lorenz, J. Soluk, D. Zakoth, S. Benzerga



Challenge



“Wipro is getting ready to deploy its newly developed digital technology (AR/VR/AI) “do-your-own repairs tool” that will help people repair their white goods in their homes. With what business model could the company deploy this new technology?”
NITIN NARKHEDE - General Manager, Emerging Technologies and Innovation

WIPRO’s Background

WIPRO is a leading global information technology, consulting, and business process services company. They harness the power of cognitive computing, hyper-automation, robotics, cloud, analytics and emerging technologies to help their clients adapt to the digital world and make them successful. The company is recognized globally for its comprehensive portfolio of services, strong commitment to sustainability, and good corporate citizenship. Wipro has over 160,000 employees serving clients across six continents that explore innovative ideas and connect the dots to build a better and bolder future.

Recommendations from the practitioners session

The community of experts and academics offered takeaways on how WIPRO could use digitalization to create and capture value. Below are the insights from the round table discussion.

1. Potential of positively impacting the society in the “most need”

The participants identified several aspects that relate to the value and benefits that the technology creates and, therefore, potential target markets such as remote repairs, medical assistance, interactive classes, professional education, remote classrooms.

This technology would add the following value to these markets:

- Cost reduction: instead of driving to the next city to get certain services, individuals could get them directly through the app;

- Convenience: the technology saves time and can be used from home;
- Reduction of waste: instead of throwing something away, it will be repaired, improving the life cycle of goods and enhancing their durability.

Institution	Topic	Quote
Academic from ETH Zurich	<i>Customer needs</i>	Let`s focus on “go and see the customer!”. Get close to the end user, the customer.
NineSigma Expert	<i>Customer needs</i>	Hospitals – repair equipment? Start with critical!
Expert from BreezoMeter	<i>Customer needs</i>	Air conditioning, refrigeration – food supply

2. Identifying crucial challenges in the villages:

The prerequisites to be met in order to enable WIPRO’s technology to generate value include:

- User-friendly app: make repair as easy as possible for non-experts;
- Efficiency: inventory has to be managed in a very efficient way;
- Digital Literacy: some education and training would be needed to enable villagers learning how to deal with new technologies such as app and remote learning;
- Cost effectiveness;
- Infrastructural support: the infrastructure to deal with the items above-mentioned need improvements; for example, connectivity in the villages is limited with slow connection and narrow bandwidth.

Institution	Topic	Quote
Expert from Xiaomi	<i>Challenges</i>	Connectivity – Slow internet connection - Intermittency
Expert from NineSigma Holdings	<i>Challenges</i>	Distribution of parts – replacement hardware parts
Academic from Berkeley	<i>Challenges</i>	Inventory management becomes an opportunity. Partner with technology and other distribution companies.
Expert from Forbes.com	<i>Challenges</i>	What are the most important needs? – What the customer most needs? Track the biggest problems for the user.

3. Orchestrating ecosystems leveraging advantages coming from competition

Some opportunities were presented that would leverage WIPRO’s advantage over the competition and, therefore, generate impact in the villages. The most relevant of those are:

- Creating awareness around the brand and establishing partnerships to deliver the product with stakeholders such as the government, schools, service providers.
- Extending the business and the cooperation with agricultural companies;
- Create an ecosystem and a value chain that connects WIPRO throughout the streams of the chain, going through service providers and OEM, up to reaching the end users in the villages;
- Evolving the software through small iterations that follow users’ needs.
- Creating an Uber driver/Amazon deliverymen-style of ecosystem. In this ecosystem, branded companies’ professional experts and village youths represent the suppliers, while the users of popular products are the customers. Focusing on fewer, more popular products is better than aiming for a larger quantity of high end products. August Loesch’s Central Place Theory might be useful in determining the locational distribution of service technicians. This theory could help in two ways:
 - Address how to handle thinly spread customers in a market place: the solution might be rotating market concept of technicians traveling to pre-set locations in pre-set dates.
 - The rotation could have a hierarchy so that a higher end goods services rotation would have a different pattern than lower end goods in an embedded pattern of hexagons.

Institution	Topic	Quote
Expert from Xiaomi Technology	<i>Customer needs</i>	The app needs to have a very simple interface
Expert from BreezoMeter	<i>Customer needs</i>	Step 1 – trying to troubleshoot what is wrong with the product Step 2 – accuracy - communicate the solution better
Expert from Xiaomi	<i>Customer needs</i>	- Increasing efficiency - Machine Learning: more people using it means more learning for the technology that, in turn, means more accurate problem solving
Academic from ETH Zurich	<i>Customer needs</i>	Start small - Trial and error – Go in the field and test the product. Get feedback. What we can deliver fast? – Learn from the field.
Academic from Berkeley	<i>Stakeholders</i>	1. Equipment Manufactures 2. Jr. Engineer 3. Experts

		<ol style="list-style-type: none"> 4. Trainers for engineers 5. Consumer (DIY) 6. Content Writers (manual, videos) 7. Inventory providers
Academic from UC Berkeley	<i>Stakeholders</i>	Economic opportunities for rural population
Academic from National Chiao Tung University	<i>Solutions</i>	Wipro should create a Uber driver- or Amazon deliverymen-style of ecosystem. Branded companies' professional experts and village youths are their suppliers and popular product users are their customers. Focusing on popular and few products are better than high end and many products. It also makes AR instruction feasible because of long production time.

4. Technology advices come from different points of view and create differentiation for WIPRO's products

All the tables agreed on the use of Data Analytics to create a competitive advantage, but other solutions also came up:

- Increasing efficiency by using Machine Learning to learn from the users and partners. More people using it, leads to more learning, which leads to more accurate problem solving;
- Use data and analytics to have more accuracy in inventory expenses and cost analyses. This would benefit the whole ecosystem. Gathering data, WIPRO could optimize product development and maintenance, logistics/distributions, thus improve end consumer satisfaction;
- Provide a platform that rewards users who acquire repairing skills and learn how to fix devices. This way WIPRO would increase its user base;
- Using data analyses it can provide feedback to OEM so they can redesign their products to be sustainable and make "LEGO" modular;
- Create a ranking system for the experts using a probabilistic reputation model similar to Bleacher report, this way experts will organically emerge;
- Use data and smart tools to match experts to customers based on different categories and characteristics.

Institution	Topic	Quote
Expert from Kinetropo	<i>Solution</i>	Provide a platform for matching users who have gained knowledge and skills in solving problems with users who still have problems.

Academic from ETH Zurich	<i>Solution</i>	Data analysis. Prediction.
Academic from ETH Zurich	<i>Solutions</i>	Data will play a major role. In particular, we investigated the role that analyzing and learning from the data that the phone app produces can be beneficial and have further business applications. Further value can come from teaching and learning maintenance operators.
Expert from PayPal	<i>Solutions</i>	Do a Shakti (Unilever) type system to train the repairing people. Get a manufacturer to do an Exclusive up-front. Have them create repair friendly products and the video and repairing content
Academic from ETH Zurich	<i>Solutions</i>	Look at the Mahindra & Mahindra case in Schilling textbook. Enable machine learning.
Academic from ETH Zurich	<i>Solutions</i>	Go and see what the customer really needs. Understand their pain points first. Focus on what to do with the data. How can you create value from the data that come from the operators?

Conclusions

WIPRO faces a diverse set of challenges to leverage its product, but it also has opportunities emerging from different sectors of the ecosystem. The company could generate income from different suppliers and vendors to monetize its products, and that would improve the cost effectiveness and, therefore, induce more villagers to engage with it. WIPRO should establish partnerships with schools and businesses to promote its products in the villages and create awareness around the brand and the solution proposed. Moreover, WIPRO will need to think broader about its potential customers and include rural areas, agricultural business, and hospitals. The company should explore the possibility of leveraging existing infrastructure, such as agricultural co-ops to support maintenance services in the rural areas. Indeed, it is easier and cheaper to attach services to the existing organizations.

Finally, with the developed technology, WIPRO has the potential to create a solid solution and to use the data created through it to leverage the whole ecosystem and, in turn, its own business. It can approach the situation from different points of view and even monetize its data by selling them to OEM and other service providers.

Challenge #2: DAIMLER AG



Chiara E. De Marco, PhD

OI Fellow: Ashish Bhatt

Academic Moderator: K.Greve, L. Kreiling, R. Lorenz, D.Marzavan, S. Bez.

Challenge



As Daimler enters new markets, such as autonomous vehicles, how can a mobility services firm accelerate internal innovation against uncharted territories in the uncertain times of digital transformation?

SHÉHÉRAZADE BENZERGA - Innovation & Digital Transformation Manager

Daimler's Background

Founded in 1886, Daimler AG is a multinational automotive corporation based in Stuttgart, Germany. The Company is engaged in the development, production and distribution of cars, trucks and vans in Germany. With its divisions Mercedes-Benz Cars, Daimler Trucks, Mercedes-Benz Vans, Daimler Buses and Daimler Financial Services, the Daimler Group is one of the biggest producers of premium cars and the world's biggest manufacturer of commercial vehicles. As market leader, Daimler is committed to continuous innovation and investments in the autonomous vehicle and emission-free automotive markets. The Company has production facilities in approximately 20 countries and over 8,500 sales centers around the world.

Recommendations from the practitioners session

Inherent to Daimler's success in the autonomous vehicle market is the development of a burgeoning ecosystem and strong partnerships with local, state, and federal government bodies. Recently, Daimler partnered with Bosch and the City of San Jose to develop a pilot project to explore how autonomous vehicles can help improve city traffic flow, enhance road safety, and provide new mobility opportunities for those without driver's licenses. This pilot program exemplifies the importance of collaboration amongst suppliers, manufacturers, consumers, and governments to overcome challenges and lay the foundation for the future.

The community of experts and academics offered three takeaways on how Daimler can accelerate internal innovation in uncharted and uncertain times of digital transformation.

1. Continue to develop partnerships with regulators and other pertinent parties in the marketplace

Partnerships allow firms to help share best practices and benchmark, but most importantly, partnerships lead to greater achievements that no parties could attain alone.

Daimler should focus on building an ecosystem in which the interests of all the sector stakeholders would be taken into account and aligned, pursuing the maximization of the benefits not for single actors, but at the ecosystem level. In so doing, Daimler would catch the opportunity of moving away from being a ‘traditional’ player in the automotive industry, becoming rather an orchestrator of relevant interests in the marketplace. Besides corporate partners, Daimler could involve other stakeholders such as regulatory bodies and industry influencers.

Among them, Daimler would play a leadership role in creating a shared vision and action plan aiming at building a common vision for the future of the market.

Finally, along with local, state and federal governments, Daimler could develop test markets for autonomous vehicles, but also envisage and craft legislative guidelines to work towards. In uncharted territories where the legal and regulations have not yet been mapped, partnering with governments and regulatory bodies allows for the development of an efficient and prosperous environment. Especially when working with the governmental department of transportation, the use of *“good data on accident mitigation and economic benefits is key!”* (An Expert from Avery Dennison).

2. Improve the public perception of autonomous vehicles to foster consumer advocacy and grassroots movements

Leveraging users represents one of the stronger tools that Daimler could harness in order to address the skepticism around the autonomous vehicle phenomenon, which does not achieve high levels of trust and/or confidence from potential users. This can jeopardize the development of the technology and, therefore, future businesses opportunities. In order to address these issues, Daimler could act developing the possibility of testing offering personalized driving experience by considering individuals’ personal preferences such as, for example, temperature in the cabin, music, etc.

When Uber was going to market, it encountered many headwinds, but one way the firm was able to overcome those headwinds was through consumer advocacy. Customers realized the safety and mobility gains of the product, and become advocates for the firm. Consumer advocacy can help change legislation and generate a viable value proposition of autonomous vehicles that creates value for the consumers. The more champions

there are for a product, the more tailwind a firm has to continue to innovate and forge forward. Therefore, Daimler should continue to have strong dialogue with its consumers and community to define what the future will be and develop a united front.

3. Rethink the concept of ownership vs service provider and focus more in the latter.

Another solution involves leveraging the social capital, rethinking the concepts of ownership over goods and beneficiaries of service. With autonomous vehicles, Daimler would take the ownership over the movement just offering transportation services. This would offer many advantages to users, such as reduced commute time, increased personal and family time, pay-per-use models, etc. These potential advantages would push the community in supporting the development of autonomous vehicles and support the adoption of desired changes in the legislation to implement use of Daimler autonomous cars for efficient commuting: *“Critical factor is to pick up a main need for the community and take ownership”* (An Expert from LEO Pharma).

Institution	Topic	Quote
Expert from Clorox Company	<i>Solution</i>	Align with a panel of partners, including regulatory bodies, industry influencers, and internal leadership to create a shared vision and action plan.
Expert from ESADE	<i>Solution</i>	Promote consumer advocacy to change legislation and generate a viable value proposition of autonomous vehicles that creates value for the consumers.
Expert from Sanyo Chemical	<i>Solutions</i>	Increase the number of test markets to learn about technologies, new business models, and government incentive structures.

Conclusions

Infrastructure that supports automated driving is becoming very important. Automated driving faces a huge challenge since it takes half a million codes just to have a robot deploying a simple task such as opening a door. Combining “if statements” required to address different shapes, textures and locations of the door handle alone would be one example. Making the environment where robots operate predictable can greatly simplify such software development efforts. Managing the infrastructure that controls the environment where the automated machines operate might be the crucial battlefield of the future. Daimler should think about how it can develop such assets, along with strategies to counter incumbents’ advantage (i.e. Google) should they decide not to share the infrastructure. As data would be increasingly used it is important to partner with companies that already have an expertise in that area.

In the breakout sessions, many groups suggested that the best way to push an idea forward is using test markets to learn about technologies, new business models, and government incentive structures. Test markets give unadulterated and relevant information that Daimler can quickly implement into its business models. Trial and error has been a brute force innovation method that has worked for hundreds of years, but coupled with cutting edge technology such as machine learning, the pace at which prototyping and synthesis can now occur has never been seen before.

Another relevant element brought to the surface during the challenge section concerned the characteristics of transformation in the transportation sector: it is a “decentralized digital transformation” rather than an issue of creating reliable autonomous cars. Indeed, the focus of the discussion should look at autonomous vehicle as a source of traffic problem since they would generate an increase in traffic and number of vehicle circulating. Therefore, as the former CEO of Ford Mulally recently argued, the main investment in the sector should be made in mass transportation solutions such as the Hyperloop. Nonetheless, even this could be shortsighted, since mobility is already in a declining phase and the need of moving will lower over time along with the increased decentralized virtualization of the world.

Recommended references

Schwartz, S.I., Kelly, K. (2018) “No One at the Wheel. Driverless Cars and the Road of the Future”

Challenge #3: KANEKA



OI Fellow: Alex Klein

Academic Moderator: A. Pundziene, O. Kokshagina, H. Bhimani, M. Geissdoerfer, D. Zakoth

Challenge



“Kaneka wants to improve innovation internally through the following lens: how can Kaneka accelerate internal innovation utilizing a two-sided digital ideation/challenge platform through which it can address company’s internal and external challenges?”

ALAN WALKER – Vice President of Marketing and Development

KANEKA’s Background

Kaneka is a large Japanese international chemical manufacturing company that is interested in improving innovation internally. Kaneka sees itself as a leading chemical manufacturer in the world’s sustainably focused future, and is aiming to spur growth through continued innovation. In order to maximize opportunities to innovate, Kaneka is using a digital Open Innovation platform pursuing a faster aggregation and evaluation of innovative ideas from within the company. Ideally, this mechanism would not only help to surface ideas for innovation but also foster an innovative spirit in all workers at Kaneka.

Recommendations from the practitioners session

The community of experts and academics offered four takeaways on how Kaneka could use digitalization to create and capture value:

1. Develop a “mobile focused approach” to ease accessibility and spur internal engagement

Kaneka has the opportunity to learn from the mobile approach that has been highly successful for social media and networking companies. The company has a chance to “cherry pick” the best success factors from the experience of some digital platform, such as:

- Twitter: requiring brief (hence, easy to screen) internal submissions;
- Quora: allowing people to submit problems as well as new ideas;

- Reddit: use of upvoting with weighted votes given to experts in the space.

Deploying these attributes through a platform that is mobile-friendly could provide an ideal platform for engagement in innovation.

2. Ensure a concrete feedback loop for internally developed innovation ideas

Throughout the discussion there was a sense that internal innovation dies as a result of a lack of feedback, no sense of impact from providing ideas, and no communication regarding next steps. Once employees engage with the platform, there must be an ongoing feedback loop that shows the contributors that their ideas and efforts outside of their normal role - i.e. their willingness to thoughtfully contribute to improving innovation - was taken seriously by management. While not all ideas will turn into reality, each idea should be given attention and the individual contributing the idea should be acknowledged and updated accordingly.

3. Foster a sense of urgency in engaging with innovation

As was pointed out in breakout sessions, when a company is successful and growing, it is in many ways the hardest time to develop a sense of urgency for innovation since this is when there is no visible need for change. However, it is widely acknowledged that continuous innovation is necessary to stay ahead of the competition. By providing open access to the site, as opposed to invite-only, and using broad company communication channels to broadcast the desire for ideas, employees will feel their input is needed *now*. Finally, the challenges should be time bounded: not having an open ended time period would help in spreading a sense of urgency for innovation

4. Explore a gamification approach to ensure constant activity

Multiple breakout groups suggested that developing a game-oriented approach could accelerate engagement. If the platform can provide incentives for engagement - either monetary or non-monetary - it could lead to a major growth in idea generation. Indeed, recognition and acknowledgment for idea contributors could represent the most effective incentive as a non-monetary mechanism that enhance willingness to participate. Furthermore, the perception of continuous activity, which could be driven by regular competitions within and/or among groups for engagement, will only further engrain this in the company's culture. As was bluntly summarized by an innovator at WOIC, "*make it feel like a lightweight game not like big corporate.*"

Institution	Topic	Quote
Expert from Kinetrope	<i>Solution</i>	“You have to have a reward, you have to have a need for the person to come back.”
Academic from HEC Montreal	Solution	“If one business unit helps another business unit innovate, perhaps they could be rewarded with a larger innovation budget.”.
Expert from NineSigma	Solutions	“Recognition needs to go both ways; people need to be recognized for ideas and for questions.”
Expert from Dupont	<i>Solution</i>	“Need to make sure ideas don’t die off and that people in the community feel like action is coming from their idea.”
Academic from RWTH Aachen University	<i>Alternatives</i>	“Do some Chematons! Like Hackatons...but for chemicals!”

Conclusions

The creation of a company ideation/challenge platform through which the overall organization can contribute to innovation shall never be disconnected from the specific needs of the company. Successful ideas should be concretely linked to institutional and business processes.

Kaneka’s platform is currently open only to invited people. However, if opened to all employees, the platform would be more successful. Typically these platforms are only open to engineers, but bringing input from all functional business areas into the challenge would increase the quality and novelty of ideas and proposals. This would be particularly important given that Kaneka has multiple business lines that are closely interlinked. Crossing these business lines for ideas means input from employees in all four major product lines.

Finally, Kaneka should digitalize the Japanese tradition of company’s weekly meetings during which employees freely offer and discuss their thoughts on the businesses to the management. This would make the platform a place where

Kaneka can store institutional knowledge such as customer responses to products and market intelligence learnings of the employees.

Kaneka’s focus is currently to collect ideas internally because the company is trying to create integration, knowledge sharing, engagement and incremental innovation across its business silos. Nonetheless, a wider use of the platform can be envisioned: its use for catching market insights and collecting megatrends is open externally. Simply extending the platform to external ideas would offer these possibilities. However, Kaneka

should be aware of the sensitivity of IP issues, hence opening the platform only to curated audience to gain benefit from external fresh and analytical perspectives.

Challenge #4: ALLERGAN



OI Fellow: Belen Salazar

Academic Moderators: O.Kolshagina, A. Pundziene, S. Chon, A. Rouyre, M. Geissdoerfer

Challenge



“What innovative digitally driven design would you suggest for supporting busy physicians and/or patients, to get them relevant, accurate, reliable and real-time information and analysis quickly?”

LINDSEY KARBERG, VP of IT Digital Immersion, Allergan

ALLERGAN’s Background

Allergan is a fully integrated global healthcare leader that develops, manufactures, and commercializes worldwide branded pharmaceutical, device, biologic, surgical, and regenerative medicine products. It operates in 100+ countries, with more than \$15B global sales and over 16,000 employees across the world.

Allergan’s main therapeutic areas are eye care, central nervous system, gastroenterology and aesthetics, dermatology & regenerative medicine. The latter division keeps growing year over year, thanks to the success of products and devices like Botox Cosmetic, Juvederm and Coolsculpting. End costumers of these products voluntarily choose to use them, thus their cost is not reimbursed or covered by healthcare insurance plans.

The purchaser of facial aesthetics products are generally managers or owners of a medical center, who requires a gold after-sale service from Allergan. Currently, clients with enquiries are left with no other choice than visiting one of Allergan’s offices or calling. Allergan’s call center organization is poor, with pain points including poor information exchange, low data availability, customers unaware of self-service channels, no personalization and frequent tech crashes. It is far from responding to customers’ needs, including channel alternatives, online resources, more and better educational resources or improved loyalty programs.

The challenge that Allergan proposed at WOIC 2018 was *how the company might provide a seamless after-sale customer experience? How can the solution be scalable to easily integrate new companies/businesses as Allergan keeps growing?*

Recommendations from the practitioners session

The community of experts and academics offered the following takeaways on how Allergan can reimagine its after-sale service to improve customer experience:

1. Develop an omni-channel customer center

Create an omni-channel customer center that gives clients the flexibility to select how they want to be attended to, while all data is collected on a single point and source of information.

This omni-channel center should include:

- Call center, with the option to book a call appointment in advance. Note that 4 out of 5 people find it frustrating or worse to be stuck by a phone or computer while waiting for customer support (Harris Poll on behalf of OneReach, 2014);
- Video call through appointments;
- In-person appointments scheduled online;
- Private Life Chat Box;
- Private messaging window (linked to email);
- Open Live Chat where customers can post their problems and Allergan answers publicly so that everybody can refer to this;
- FAQ available and easily accessible to all, classified by category (product, disease area, issue). Note that 84% of people use online self-service resources to solve their customer support issues, more than choose the phone or any other channel (Forrester Research, 2016)

The idea is that these channels are interconnected, with every issue related to one client accessible at once in one single profile, regardless of the way his/her concern was handled (through client ID or similar). It should also permit to share attachments, documents, analysis results, etc., directly on this platform, through every channel, but one single point to save them.

This will ensure a higher quality customer experience, certainly better reviews and word-of-mouth promotion of Allergan services. A 1-star increase in a restaurant's Yelp rating leads to a 5-9% increase in its revenue¹; this

¹ Luca, M. Reviews, Reputation, and Revenue: The Case of Yelp. com (Working Paper 12-016). HBS Working Paper Series (2011).

is extrapolated to all industries to different extents, but it is worth investing in a premium customer service to foster revenue increase.

Remark: this improved customer service will not only eventually increase revenue, but also reduce costs (less personnel, more productive employees, less time-consumed) improving profitability for Allergan in the long-run.

Institution	Topic	Quote
Expert from Siemens	<i>Solution</i>	<i>“Uber is a platform business model: the more customers you gain, the more drivers you get. With an appropriate customer platform system, good reviews on Allergan service will attract more physicians but also more patients interested in Allergan’s products”</i>
Academic from Keck Graduate Institute	<i>Solution</i>	<i>“The idea is to create a sense of community where peers share knowledge and clients share issues“</i>
Expert from NineSigma	<i>Solutions</i>	<i>“Recognition needs to go both ways; people need to be recognized for ideas and for questions.”</i>
Expert from Dupont	<i>Solution</i>	<i>“Need to make sure ideas don’t die off and that people in the community feel like action is coming from their idea.”</i>
Academic from RWTH Aachen University	<i>Alternatives</i>	<i>“Do some Chematons! Like Hackatons...but for chemicals!”</i>

2. Partner with companies with the required technology and expertise on CRM

Allergan requires a customer service that is available to clients through different platforms and channels. However, developing an omni-channel as described above can be challenging for Allergan to do it on its own, since it requires IT expertise and best-in-class software developers, it is time-consuming and might require significant up-front investments.

There are many cutting-edge technologies that could improve the customer experience in this line, like machine learning or AI to automatize and personalize the service while making it more efficient for the provider. But mastering this topic starting from scratch can be difficult, especially when it is not Allergan’s core business.

Instead of developing an in-house system, Allergan can partner with external companies that can provide a customized after-sale service center. Here is a list of companies proposed by challenge participants that could be interesting for Allergan to partner with:

- Spruce: healthcare software system that offers patients a one-stop communication point with various channels by which they can contact the physician (video calls, live chats, messages)
- Salesforce: cloud-based software company offering the #1 CRM solution to its clients
- R4: cross-enterprise AI solution that helps large organizations unlock growth opportunities blocked by traditional approaches
- Health Gorilla: platform and solutions provider to secure clinical records interoperability and connect patients, physicians, healthcare organizations and vendors

Another Open Innovation approach would be for Allergan to become part of an accelerator to stay connected to startups in the eco-system. In that way, Allergan would have a division scouting new technology for them, to ensure being up to date going forward.

Institution	Topic	Quote
Expert from Institute for Information Industry	<i>Modality</i>	1. Deploy third party CRM systems with extensive customer history. 2. Integrate the 4 separate tech systems.

3. Implement an incentives system for employees in the customer center to ensure high-quality service

Keeping employees incentivized is key to ensure they deliver a premium customer service.

One way of motivating the customer service team is to have clients rating their experience right after being attended to, regardless of the channel they have used (calls, chat box, email...). Employees will then have part of their salary variable, dependent on the ratings they receive.

Implementing gamification techniques among employees can also help to motivate them while increasing their engagement. This can take various forms, like point scoring systems to compete for monthly/quarterly awards.

However, as the customer service increasingly relies more on automatic responses, AI and machine learning systems traditional incentives systems become more challenging.

Institution	Topic	Idea
An Expert from IBM.	<i>Incentive and AI</i>	“Robo-economics [ownership when AI robots do more of the work and earn more of the income (Richard B. Freeman, 2008)] point us in the direction of how to motivate people in an eco-robot world. A profit-sharing approach is a good idea“

4. Other ideas coming from the participants

Institution	Ideas
Expert from Paypal	Become a big data company. Then, build an Allergan Marketplace that utilizes AI to serve customers (both professionals and consumers) with a user interface easy enough for aging
Expert from Avery	Use image analysis like the cosmetics folks so users can visualize how they may want to look etc. use mobile app to access help with customer support mostly. Keep a knowledge live support for those old or using landline!
Expert from Novartis	Think about chat, launching an app, utilizing amazon svcs to manage logistics and crest customer community. Add a marketer to team for promo info, planning, etc proving info to center before promo. Build cross collaboration. Incentivize employees w gamification. Consider new quick agile platform under “innovation lab” rather than trying to fix or integrate outdated legacy systems. Cost-benefit analysis.
Expert from Wipro	<ol style="list-style-type: none"> 1. Make online transactions easy using mobile app (use native easy to app vs a mobile website). Make the mobile app a go to app for product education, transactions, keeping track of inventory/usage/procedures. The data captured by the app will be highly valuable for the company. 2. Explore subscription model for products with longer shelf life. The order quantity could be decided algorithmically using the data above. 3. Explore use of multimodal chat (SMS, messenger, WhatsApp) using engine like Avaamo as a support channel 4. Provide order status through push message and offer ETA information

Conclusions

A very clear message coming from the table discussion was the importance of not wasting time, resources and efforts in starting any development from scratch. Allergan should build on the development already advanced by other companies, embracing an Open Innovation approach, to benefit from the expertise that its potential partners already master in other fields.

Moreover, a point of relevance to be stressed is the need of engaging customers on the use of customer-center channels through guaranteeing high value of the content, but also fostering user engagement through innovative mechanisms that secure their use and favor the scalability of such platforms.

Recommended references

David Craig. MD, *How Modern Communication Patterns and Expectations Affect Medical Practices*, Spruce Health Blog: September 11, 2017 <https://blog.sprucehealth.com/modern-communication-patterns-expectations-affect-medical-practices/>

Richard B. Freeman, (2018) *Ownership when AI robots do more of the work and earn more of the income*, Journal of Participation and Employee Ownership, Vol. 1 Issue: 1, pp.74-95

Challenge #5: APPLIED MATERIAL

Sea Matilda BEZ. PhD

Werner Fischer, Visiting Scholar, Garwood Center for Corporate Innovation

OI Fellow: Benjamin Teklezgi

Academic Moderators: S.Chon, A. Rouyre, W.Fischer, H. Bhimani

Challenge



“How AMAT can leverage its materials engineering capabilities to enter new markets with platform extensions powered by collaborations with external ecosystem partners?”

RUCHIKA MEHTA, Growth Accelerator Lead, Office of the CTO, Applied Materials

APPLIED MATERIAL’S Background

Applied Materials, Inc. is an American corporation that supplies equipment, services and software to enable the manufacture of semiconductor chips for electronics, flat panel displays for computers, smartphones and televisions, and solar products. As it is headquartered in Silicon Valley, AMAT’s world hub of innovation fits well into the mantra and thesis of the World Open Innovation Conference. The market that AMAT currently serves is growing at a high rate and its expected Total Addressable Market (TAM) for cellphone chips will be 2.87B by 2020. With good reason, AMAT is the World’s Largest equipment, services and software supplier to companies.

AMAT has a total of 16,000 employees that span 17 countries and 82 locations, with Singapore being the most productive location, responsible for 40% of the Global output.

Recommendations from the practitioners session

The community of experts and academics offered the following takeaways on how AMAT could leverage its unique capabilities and resources to accelerate markets through open innovation.

- 1. Develop an accelerator program and give easy access to your resources for attracting startups and researchers to stimulate innovation**

AMAT could provide a comprehensive accelerator program for startups and researchers to source, test and prototype new ideas from outside to stimulate technical and business innovation. Startups are now having more and more funding and strategic partnership opportunities. In order to attract them, AMAT should

develop a specific value proposition which differentiates clearly from other programs when capitalizing on its main competitive advantages:

- Mentorship with Main Customers: AMAT's value relies on its customers. To attract startups it can offer a "mentorship done by one of the customers". It would create an alignment in the interest and a competitive value proposition relatively to existing accelerator programs.
- Offer a Certificate: To attract researchers, the company can offer a certificate of proof of concept or completion of the 1-year program of partnership.
- Accelerate: Develop an accelerator program with a time frame (e.g. one year) and use this time to make the startups interact among them (event for cross seed ideas), but also give access to unique experts (i.e. AMAT's customers, (i.e. look for cross seed idea, collaboration, events, conference with "leading experts" coming from MIT, law experts).

The industry experts recommended that the following elements are needed to establish an accelerator program:

1. Provide virtual tours to AMAT physical facility to let (non-local) startups and researchers explore and learn about AMATs technology and available equipment.
2. Post industry challenges and launch idea competitions to create awareness about AMAT among startups and researchers and eventually make the best ones part of the accelerator program.
3. Ideas can be funded by AMAT as well as external sources from private and public sectors.
4. Give promising startups access to subsidized office and lodging space to ease the physical constraint of working at your facilities.
5. Provide equipment in a maker space model with expert help and business mentorship by AMAT for ideating, testing and rapid prototyping activities.
6. Create a corporate fund to invest in startups and provide a platform to let startups pitch their ideas to AMAT extended business network in order to get additional funding, expertise and support.
7. Hand out prizes and awards to the best startups and researchers and start to accelerate (equity-free) from here with periodically reviews.
8. Use fellowships and internal sabbaticals/intrapreneurs to provide full-fledged mentorship to co-innovate with participating startups.

Institution	Topic	Idea
Academic at National Chiao Tung University, Taiwan	Stimulate Entrepreneurship involving Startups	“AMAT is Invisible to the public. How to overcome? Hackathon-type of activities may be a start. Because of the physical constraint, you want to attract people to come. Then, give big prizes and start from there!”
Expert at IBM	Stimulate Entrepreneurship involving Startups	“Conduct virtual conferences to let outside startups learn to use design tools, winners get on-site work experience at AMAT. Have the final awards conference in Santa Clara with VCs.”

2. Create an internal intrapreneur culture/program linked with the accelerator program

Having set up an accelerator program for leveraging outside ideas should be complemented with an internal culture of intrapreneurship so that tacit knowledge and expertise from AMAT’s workforce can be effectively utilized for new innovations in a collaborative way. Therefore, create an open community of AMAT experts and entrepreneurs to develop ideas through internal crowdsourcing:

1. Encourage and incentivize intrapreneurship through internal hackathons and idea challenges.
2. Dedicate directors of relevant areas for developing MVPs (Minimal Viable Product), award and recognize winning employees through direct bonus tied to accomplished ecosystem growth and possible roles in new or external startup companies. Fund top ideas for incubation.
3. Cluster the startup program according to certain thematic areas and encourage employees to become part of a startup (as e.g. mentor, co-developer) which fits with their area and expertise. Provide time and resources.
4. Curate generated ideas from inside and outside when exploring possible spinoffs/spin-ins; validate potential also by external (venture) capital firms and tie up with external accelerators.

Institution	Topic	Idea
An Expert from WIPRO.	Intrapreneurship	“Launch internal idea challenges and fund top ideas for incubation. Provide time and resources in a phased manner. Allow employees to join external entrepreneurs to develop ideas. “

3. Offer buying contract for startups upfront

Asking for IP can be dissuasive for startups when collaborating with large corporations. AMAT could tackle this challenge when offering a buying contract in the first place. A buying contract should be developed across

different steps : (1) look inside the company and identify what are current problems; (2) list the problem and for each of them develop a list of requirements; (3) offer short term (e.g. 6 months) program initially with a contract specifying that if a startup manages to fulfill all the requirements, in could then be acquired; (4) during the program, assign a designated coach and mentor who facilitates internal experts that supports reaching targeted requirement in a timely manner².

4. Make or partner to develop the accelerator

There are multiple ways you can partner:

- For Marketing: be proactive in diffusing “your problem and requirement”. For that, you can reach e.g. MIT, Georgia Institute of Technology, VCs and accelerators like Plug and Play.
- For Easing Startup’s Stay: partner with accommodation service provider such as Airbnb, to design a professionally and personally valuable package of “6 months program with access to a startup spirit living place” (i.e. a house in which you will have other entrepreneurs like you as roommates and that includes co-working spaces in the house)
- For Funding Ideas/Challenges: Collaborate with NGOs, Governments and VCs to raise funds for challenges to be addressed by outside startups and entrepreneurship.
- For Skill Development Partner with online learning platforms or offer own virtual courses so that outsiders can learn AMAT specific tools ahead and during the accelerator program to accelerate number of experiments and categories continuously. Also, AMAT could provide their software toolkits to

Institution	Topic	Idea
Expert from WIPRO	Identify and Attract ideas	“Source from internal and external sources to fund viable ideas.”
Expert at IBM	Identify and Attract ideas	Adoption of virtual courses to learn tools. Thus, number of experiments and categories at annual award conferences increase each year (which also is a talent pool for ecosystem hiring).

² For a concrete example, read the Carlsberg case study of Henry Chesbrough

Conclusions

AMAT develops manufacturer equipment for electronics industries to produce components necessary for consumer electronic products from tomorrow. Startups and researchers interested in creating inventions and innovation in this field mostly don't have access to test and prototype their ideas since needed machines and equipment are not available on the market or are too expensive. Opening AMAT's labs for a variety of startups and researches to ideate, test and prototype will not only resolve their constraint but will also stimulate innovation for AMAT. Developing an accelerator program, fostering intrapreneurship, and tying these two initiative to each other could establish AMAT as the center of an open innovation ecosystem in the electronics equipment manufacturing industry and beyond.

Practitioners emphasized that AMTA can partner with multiple actors to establish the startup accelerator as well as the intrapreneurship program. This will not only speed up the process of scouting innovative idea and accelerating their prototyping and testing, but also – eventually - integrating them in AMAT's processes and technologies. Moreover, it would also enhance the programs when collaborating with a trusted ecosystem of partners.

Recommended references

Chesbrough, H., Bogers, M., Strand, R., & Whalen, E. (2018). Sustainability through open innovation: Carlsberg and the green fiber bottle.

Challenge #6: XIAOMI



Chiara E. De Marco, PhD

OI Fellow: Ran Fu

Academic Moderators: L. Kreiling, S. Benzerga, W. Fischer, D. Zakoth

Challenge



Challenge: Xiaomi offers High-Value/Low-Cost/Low-Margin products to all customer segments in emerging markets. This demands severe cost curtailment strategies in manufacturing, operation, advertisement, sales, distribution and servicing of its products. Xiaomi cannot deliver this value alone without an ecosystem to sustain and scale the business. How can the government, corporations and other institutions help create a win-win for all? In addition, rural communities lack infrastructure (reliable connectivity, power, healthcare, clean water, accessible roads). What must Xiaomi do to serve and expand the market when this infrastructure is lacking?

Paul (Ping) Lin, Vice President of Global Business Development & IP Strategy, Xiaomi

XIAOMI's Background

Xiaomi Inc. was founded on June 6, 2010 by Lei Jun and 7 other co-founders. The name Xiaomi is the Chinese word for "millet". In 2011, its CEO Lei Jun thought of a deeper meaning and suggested another context. "Xiao" represents a part of the Buddhist concept that "a single grain of rice of a Buddhist is as great as a mountain". In other words, instead of starting by striving for perfection, Xiaomi wants to work from the little things. On the other hand, "mi" is an acronym for Mobile Internet. It is also an abbreviation for Mission Impossible, referring to the obstacles encountered in starting the company.

Xiaomi Inc. is a privately owned Chinese electronics company with its headquarters in Beijing. While outsiders refer to it as "The Apple of China", Xiaomi itself prefers to be compared to Amazon instead. The company has over 3,000 employees across China, Malaysia and Singapore; it is currently expanding to India and the Philippines and planning to enter Indonesia, Thailand, Russia, Turkey, Vietnam, Brazil and Mexico. In 2011, Xiaomi launched its first smartphone, the Mi1 phone. This particular phone uses Xiaomi's own software and hardware and it is the company's crown jewel and pride. Currently, the latest version of the MiPhone is the Mi4, launched in August 2014. Furthermore, in 2014, Xiaomi launched a second smartphone, the Redmi.

Recommendations from the practitioners session

The community of experts and academics offered takeaways on how XIAOMI could use digitalization to create and capture value in rural Indian areas. Below are the insights from the round table discussion.

1. Training Xiaomi representatives on Xiaomi products to sell them opportunities and build an ecosystem

The participants identified several areas that create potential value for rural India where infrastructure and information technologies are lacking. However, in order to increase value for people who might potentially be interested in using Xiaomi products, the company should focus on creating a mutually beneficial platform. As an expert from Siemens noted, “when the cost of goods sold (COGS) is fixed, the equation becomes simpler on the other side”. For example, XIAOMI could train local representatives to use XIAOMI products so that the company can sell the opportunity to those people, creating jobs and distribution ecosystem. XIAOMI can utilize many of its technologies to facilitate the development of rural areas, some of which include:

- Hiring people to use drones for agriculture so that they can benefit from the technology impacts.
- Hiring people to use battery banks to serve as utility grids to sell electricity so that there are no power outages.
- Hiring people to use XIAOMI power banks as a “shared economy” and providing it for local people to charge their phone or other products for free.

Creating this ecosystem adds the following values:

- First adopters: local people who want to be self-employed as salesforce can be the first XIAOMI product adopters.
- Incentives: Because the local salesforce is stimulated and incentivized to sell more products, they become very familiar and thus the go-to experts who can promote the new technology from XIAOMI.
- Reduce the brick-and-mortar stores: The local salesforce might not need any physical stores to demonstrate the products to other local people. Instead, they can just demonstrate the product on-the-go, like a “food truck” for consumer electronical products.

This ecosystem could initially be built on a **B2B2C-model**. The discussion of the breakout session suggested that Xiaomi should initially establish B2B partnerships, for example with education or healthcare stakeholders, and from there then move into the B2C market.

Name	Company	Quote
An Expert from Siemens	<i>Previous with Siemens</i>	When the cost of goods sold (COGS) is fixed, the equation becomes simpler on the other side.
An Expert from Allergan	<i>VP of Digital Immersion @ Allergan</i>	“Food truck” for consumer electronical products. Sell opportunities not products.

2. Collaborating with startups

The collaboration with startups and their inclusion in the Xiaomi ecosystem was mentioned by many participants to the discussion. Cooperation with startups that are active in sustainability challenge would help addressing relevant needs of rural villages such as the provision of energy, electricity, and waste treatment. Xiaomi would become a major actor in sustaining development for these villages and, hence, would benefit from first-mover advantages in the territory partnering with local entrepreneurs and shop owners.

3. New business mechanisms and models for new value

Xiaomi could deploy different types of business model and mechanisms to create and capture value in the Indian rural market.

- **Return-product Program:** Xiaomi could contribute to the challenge of waste management acting on the short life cycles of products by offering its customers the possibility of returning these products so that Xiaomi could then upcycle and sell them cheaply to new customers.
- **Free Products Provision:** Xiaomi could provide villages with free products , e.g. family pads (mi-pads), offering them related services such as medical, health, agriculture, weather information etc. In so doing, Xiaomi would gain money becoming a solution provider on top of the freely provided products. Xiaomi would have a need-driven approach: this entails involving users, establish a community of practice and becoming a platform for micro-producers.
- **Mi-kiosk:** Xiaomi could create an information booth to disseminate information to villagers.
- **Piloting Spaces/Learning Labs:** The company could identify local needs and focus on them within labs dedicated to the development of innovative solutions that try to address health, education, information, and food problems, than developing prototypes and pilots for these solution and testing their efficacy within the villages.

Name	Company	Quote
An Expert from Siemens	<i>Previous with Siemens</i>	People can use drones to better monitor their crops
An Expert from Allergan	<i>VP of Digital Immersion @ Allergan</i>	“Shared economy” can be implemented in the rural Indian area
An Expert from Xiaomi	<i>XIAOMI</i>	Power is an issue in rural India and thus battery bank will be a great idea

4. Empowering young generation and building the ecosystem around them.

During the session, we talked about how to build an ecosystem that can cultivate young people who are interested in technology, train them in a college setting, and bring them back to contribute to their hometowns in India. This would transform them into pioneers that help grow technology adoption in rural India.

Some ideas:

- Build an institutional academy, called “XIAOMI Academy”, where young students can learn about the different technological innovations that XIAOMI has.
- Help students in the XIAOMI Academy think about how to further tailor the product-market fit for future XIAOMI products. The students could learn about product development, design, and management so that they can be the experts who really understand India’s market.
- Provide scholarships for students who commit to returning to their hometown for future developments.
- Have a XIAOMI hackathon in India to address the urging IT infrastructure issues in the rural areas.

Conclusions

Xiaomi has a vast range of possibilities to explore in catching new opportunities and penetrating the emerging markets in Indian rural areas.

The roundtable discussion highlighted how villagers would be customers focusing more on costs than on the brand of products offered, therefore Xiaomi should find new ways of offering its product at even lower or no

cost, and find new strategies to monetize. Xiaomi should not only target new generations, among which smartphones are already popular, but also senior people that could use the smartphone to access some essential services such as healthcare assistance and education. Lower costs would make Xiaomi products popular in rural areas and position the company as a major player in addressing village challenges such as connection stability and energy problems. This way, Xiaomi would pave the way to address middlemen and bureaucracy issues in the Indian institutions and would become the champion of building the connection between rural entrepreneurs and the global market, offering them connectivity and information.

Conclusion: Cross-case takeaways

The companies holding the industry challenge sections belong to different sectors, come from different countries and background and are tackling different challenges. Nonetheless, it is interesting to notice that some elements emerging from the table discussion were recurrent in more than one of the company challenges. Here we summarize common takeaways that can result relevant for any organization, and specify in which of the company challenges explored during the World Open Innovation Conference 2018 they were highlighted.

1. **Servitization:** the digital technologies can be applied to offer services on top of the products offered by the companies. The service business model to be created around these products, enabled by digital technologies, can hence nurture companies' core businesses. Furthermore, becoming a solution providers on top of the products offered could help companies in penetrating new markets such as the emerging ones in India or other developing economies, offering huge business opportunities.
 - a. *Wipro*
 - b. *Allergan*
 - c. *Xiaomi*
2. **Scalability issues** for digital technologies and platforms: the real value of platforms and digital technologies application comes from the possibility of scaling them and from the network effect that they create. The more information are submitted to digital technologies, the better they would function and, therefore, they would offer better results. In turn, the expectation of good results would motivate the submission/offer of more information. The same is true for platform scalability when they are based on availability of contents: the more and better contents are offered on the platforms, the more users will be attracted and willing to offer more and better contents, contributing to the virtuous circle. This scalability, in turn, contributes to the company's core business.
 - a. *Wipro*
 - b. *Kaneka*
 - c. *Allergan*
3. **Engagement/Gamification/Incentives:** in order to keep users, employees and, in general, content providers willing to contribute to innovation and development, companies should identify mechanisms that foster their engagement in offering ideas and solving challenges. These mechanisms can be both

pecuniary and non-pecuniary. However, it seems clear that non-pecuniary mechanisms like the recognition and public acknowledgment represent a stronger incentive not only to contribute, but also to offer better quality contents. Moreover, the gamification of some elements of the platforms can also enhance engagement and commitment of contributors. Finally, the success of idea and challenge platform can be enhanced guaranteeing that elements on the platform are strictly connected to the business.

- a. *Allergan*
- b. *Kaneka*
- c. *Wipro*
- d. *Applied Material*

4. Not reinventing the wheel: companies should leverage existing knowledge and technology to avoid wasting time and resource in replicating something that other organizations already did. They should rather establish partnerships and collaboration, with an Open Innovation approach, in order to benefit from capabilities, investments, assets and technologies that their partners master already, instead of starting from scratch.

- a. *Allergan*
- b. *Kaneka*
- c. *Applied Material*

5. Cross-silos innovation: companies seem to perceive the need of demolishing internal silos and stimulating interaction and collaboration across business units in order to leverage the opportunities and synergies existing within the organization. A good practice to accompany this cross-sectoral integration would be the creation of an inventory or “library” able to store all the data and information embedded in the company, to save a sort of “organizational learning” and knowledge in a single repository.

- a. *Allergan*
- b. *Kaneka*

6. Ecosystems: addressing the challenges more efficiently is possible involving the stakeholders of the sector from across the entire value chain and then orchestrate the ecosystem to align all the interests represented pursuing common value and advantage.

- a. *Wipro*

- b. Daimler*
- c. Applied Material*
- d. Xiaomi*

7. Customer focus: crucial to always consider customer's pain points first in order to then address the challenges in a way that guarantees to meet customer's needs. This same approach should be embraced when applying digital technologies and developing software iteratively.

- a. Wipro*
- b. Allergan*
- c. Daimler*

8. Data: data resulted to be a potential positive spillover in all the considered challenges. Their use should be leveraged to generate income and revenues, eventually selling the gathered data, or exploited with data analytics techniques to scan the external environments in identifying new opportunities, megatrends, or threats.

- a. Kaneka*
- b. Wipro*

9. Start-ups engagement and acceleration: scouting innovative ideas and opportunities developed by startups can be a strategy to access cutting edge innovation and technology development. To catch these opportunities, companies should develop structured programs in which they offer value to the startups and accelerate their business collaborating on the creation on new market and technology opportunities. The next challenge is to be attractive to the most promising startups.

- a. Allergan*
- b. Applied Material*
- c. Xiaomi*