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Scenario planning development for a multi-national printing ink company facing digital disruption in Indonesian print media industry

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Abstract

The rapid development of digital technology gives disruptive influences on the value of goods or services. New media communication technology offers media convergence that provides accessible speed, flexibility, and updated information. The existence of print media has become less common in the market. This affects all print media industry suppliers, including a printing ink company. The company will get decreasing revenue, especially if most of its current revenue comes from print media ink sales. Digital disruption is a certain thing, but uncertainty in print media arises because of the pros and cons of using digital devices for children's education, the freedom of online journalism that provides doubtful information, and the emergence of community media. The printing ink company also needs to prepare itself by making a strategy for the future that is full of those uncertainties. In this case, scenario planning can help the company to manage the uncertain future so that they can quickly adapt to the changes or the critical situations in the future and manage the complexity of turbulence, uncertainty, novelty, and ambiguity, that happen in the current Covid-19 pandemic. The key focal issue of this research is how digital disruption in the print media industry in Indonesia will affect a multi-national printing ink company over the next five years. The research involved experts from a multi-national printing ink company, a magazine publisher, a university, a digital printing consultant, a business consultant, and a disrupted public transport provider. Through intensive focus group discussion applying iterative reframing and re-perception, many driving forces were identified, two critical uncertainties were defined, and a scenario framework was created. The four scenarios came up as the result of the interaction between limited or widely available global ink supply and changes in people's behavior from conventional to digital media. These scenarios describe future challenges for the print media industry in Indonesia that are very dynamic. The company must be able to respond to emerging scenarios and adapt the strategies accordingly.

Keywords: future scenarios, uncertainty, pandemic, business strategy, management

1. Introduction and background

1.1 Digital disruption in print media Indonesia

Digital disruption happens when a new digital technology with a new business model has a disruptive influence on the value of goods or services and changes consumer behavior (Chan, 2016). Recently, Gojek has become an Indonesian decacorn startup and a leading technology group of platforms serving millions of users in Southeast Asia (Gojek.com, n.d.). They influence people in the cities to change their way of how to use public transportation from the traditional way

that often involves a high bargaining service price to the digital way that provides a low fixed service price.

People's behavior in searching information is also changed from the traditional way by reading papers to the digital way by browsing electronic news. Based on media consumption surveys in 65 countries in 2010 and 2014 that were published by ZenithOptimedia, the internet has been gradually replacing traditional media (Richter, 2015). The Reuters Institute affirmed that print media started down in 2014 in the US based on a survey of 2,269 US news consumers in the period of 2012–2017 (MarketingCharts.com, n.d.). In Indonesia,

the decreasing number of print media circulation for all segments were started in 2015 (Zuhra, 2017). It is hard to get print media such as newspapers and magazines in public currently. On the other hand, electronic news and electronic magazines are flying over through mobile applications from one to another at very low cost or even for free. Another analysis based on the Indonesian Publishers Association's (SPS) data shows that in the last four years, there were 404 media publishing closed and there were 850 remaining publishing in 2017 (Wiwoho, 2017). With the same decreasing rate continuing for the following years, it concludes a rough prediction that the remaining age of a newspaper in Indonesia is only nine years, which is 2026.

Unfortunately, the current Covid-19 pandemic will boost high digital consumption and abandon print media. Pandemic pushes people to access digital media instead of reading print media. In March 2020, the first month of the Covid-19 pandemic in Indonesia, the number of health site visitors increased 53 % compared to previous data in February 2020 (Aninda, 2020). On the other hand, the Deputy Chairman of the Indonesian Press Council, Hendry Bangun, assessed that print media are most affected by the coronavirus or Covid-19 among other types of mass media. To PRFM 107.5 Radio on 21 April 2020, Hendry said "All business fields are under heavy pressure, including mass media, especially print media because it coincides with a rising dollar, loss of advertising, and fewer purchases" (Firmansyah, 2020). Some provinces in Indonesia implement restrictions on business activities as well as people movement limitations. The business restriction period during the Covid-19 pandemic and the economic contraction accelerate the fall of many print media companies.

Out of obvious trends that lead to the extinction of the print media industry, limited print media companies may exist in the future. Reading competencies are changing with the use of digital technologies, but people still see the benefits of reading with paper which they continue to use, especially to convey private emotions and intimate feelings (Vincent, 2016, p. 97). The ability of print media companies to change their business model or their dynamic capabilities dealing with media convergence may happen. Media convergence offers the integration of multimedia communication for compelling user experience and uploading additional content as important advantages compared to print (Fedorovskaya, et al., 2016, p. 133). Online community and offline events are engagement platforms as vehicles to build a story that creates a good experience (Viljakainen, Toivonen and Seisto, 2016, p. 155). The fact is that even during the Covid-19 pandemic, long-distance learning still requires printed books that can be borrowed from school or bought by students (Slameto, 2020). This may continue in the future but also may not.

1.2 Multi-national printing ink company

The company in this research is a multi-national printing ink company in Indonesia. The company is a subsidiary of a global ink supplier that has more than 150 branch offices, sales offices, distributing warehouses and representatives worldwide, and delivers high-quality printing ink solutions to customers. The parent company fully supplies ink products to be sold in the Indonesian market through trading business activity only. The majority of the business in Indonesia is offset ink supply to mostly media printing companies and some packaging printing companies. It was around 60 % of the total sales volume in 2019. The company claims to have 20 % of the market share in Indonesia's offset printing industry. Web ink sales volume reflects specifically the market segment of high-volume media printing such as newspapers, books, magazines, flyers, and brochures. It was 46.93 % of the total sales volume in 2017 and went down to be 44.37 % of the total sales volume in 2019. In the second quarter of 2020, it was continuously down to 28.76 % of the total sales volume after Joko Widodo, the President of the Republic of Indonesia, declared national status under the non-natural disaster of the Covid-19 pandemic in April 2020.

1.3 Research background

The print media industry is not in the process of its death but is coming to terms with uncertainty and rapid technological change (Barthelemy, et al., 2011). Past European analysis of the consumption of print media and their digital equivalents depicted a complex configuration (Nossek, Adoni and Nimrod, 2015, p. 381). In the current situation, the print media industry and printing ink companies who face impacts of digital disruption may come up with new approaches to such complex problems added by the Covid-19 pandemic. The broader condition disrupts the activity of the people and the business entities and changes the established rules to be the new norm. This pandemic creates unpredictable situations due to the complexity of turbulence, uncertainty, novelty, and ambiguity called TUNA (Ramírez and Wilkinson, 2016). Scenario planning is part of strategic planning that relates to the tools and technologies for managing the uncertainties of the future (Ringland, 1998).

Scenario planning is a methodology that uses the inherent human capacity for imagining futures to better understand the present situation and to identify possibilities for new strategies (Ramírez and Wilkinson, 2016). Since Herman Kahn began developing scenarios for the Air Defense System Missile Command, a large-scale early warning system in the 1950s (Bradfield, et al., 2005, p. 798), many methods and approaches have been introduced. There are Schwartz' eight steps of the scenario building process (Chermack, Lynham

and Ruona, 2001, pp. 17–19), Schoemaker's ten steps of scenario planning (Schoemaker, 1995, pp. 28–30), The Causal Layered Analysis that introduces four layers of scenarios (Inayatullah, 1998, p. 820), Shell 2001 Global scenarios that consist of four phases (Shell, 2008, p. 25), TAIDA method for scenario planning (Lindgren and Bandhold, 2003, p. 47), Harvard's five stages of scenario planning (Garvin and Levesque, 2006), the five steps of Transformative Scenario Planning (Kahane, 2013, p. 20), Oxford Scenario Planning Approach (Ramírez and Wilkinson, 2016), and further development of transformative scenario planning that consist of three phases (Bøjer, 2018, pp. 7–14).

The scenario planning application example is on Shell 2001 Global Scenario. The scenario project began in September 1999, developing two scenarios with the same assumption that global economic growth would continue but with different patterns of globalization which are dominated by global elites in the Business Class scenario or by the people of the heartlands in the Prism scenario (Shell, 2008). Shell is able to adapt quickly or build new scenarios when facing emerging risks and crises, such as the invasion of Kuwait, Iraq, and the prospect of a global influenza pandemic triggered by a new flu virus (Ramírez and Wilkinson, 2016). Another example of a scenario planning application is in Philips Lighting B.V. They explored how people may experience cities in 2035 and constructed four scenarios (Fablab, Sandbox, Resort, and Campsite) from two driving forces of access to information and adapting to rapid change. These four scenarios help Philips Lighting to think about how the future may change and challenge their assumptions (van der Weijden, et al., 2017).

1.4 Research questions and limitations

This research is limited to develop scenario planning for a multi-national printing ink company as one of the printing ink suppliers in Indonesia. The discussion will

focus on the key focal issue of the company in the middle of digital disruption in the print media Indonesia, the scenario framework creation, the strategic imperatives, and the activities that should be conducted by the company to address the future challenges. The development of scenario planning involved a small group discussion that consisted of experts from the internal and external environments. The scope of print media business in this research comprises newspapers, magazines, books, and a big volume of promotions such as flyers and brochures. With the shortage of research time and small number of stakeholders involved in this research, the result of this research is the best scenario planning that researcher can provide and the company or other stakeholders may conduct further deeper development if required.

2. Methods

This research adopted five stages of scenario planning introduced by David A. Garvin that consist of orientation, exploration, scenario creation, option consideration, and integration (Garvin and Levesque, 2006). This is exploratory research using qualitative data that was collected through four Focus Group Discussions (FGD) in October and November 2020.

Table 1 describes the series of FGDs involved nine experts from a university, a publisher, a digital printing consultant, a business consultant, a disrupted public transport provider, and a multi-national printing company. The scenario creation was conducted with iterative reframing and reperception as an Oxford Scenario Planning Approach (Ramírez and Wilkinson, 2016). The FGD series allowed participants as learners to change their individual perceptions to a broader environment that never crossed their minds. In this scenario planning development, external environments in the political, economic, sociocultural, technological, envi-

Table 1: Focus Group Discussions participants

No.	Level	Organization	Work experience
1	Senior Manager	Multi-national printing ink company	23 years of experience and also active in the printing community
2	Manager	Multi-national printing ink company	14 years of experience
3	Supervisor	Multi-national printing ink company	12 years of experience
4	Supervisor	Multi-national printing ink company	15 years of experience
5	Lecturer	University	7 years of academic experience
6	Chief Editor	Publisher	17 years of experience
7	Manager	Digital printing consultant	20 years of experience
8	Director	Business consultant	22 years of experience in two multi-national printing ink companies, 13 years of experience as a business executive coach and author of business books
9	General Manager	Public transport provider	21 years of experience

ronmental, and legal factors called PESTEL framework and TUNA impacts are dynamic. For the company to sustain its competitive advantage, any fit between its internal strengths and the external environment must be dynamic (Rothaermel, 2017, p. 123). Dynamic capabilities relate to the capability of the company to sense and seize any opportunities, to navigate any threats, to combine and reconfigure its assets for building long-run value by responding to changing customer needs (Teece, 2009, p. 54). The dynamic capability framework introduced by Einar Lier Madsen provides an understanding of how the company can explore and exploit its external and internal resources (Madsen, 2010). Even though this research involves the subjective interpretation of an expert team, the objective analysis of the theoretical framework is also applied.

3. Results

3.1 Driving forces

The expert team explored external factors around the key focal issue that consist of trends, emergencies, ignored things, and uncontrolled forces that influence the company's future. Table 2 describes that 17 driving forces were discussed during exploration and scenario creation. The driving forces will create future scenarios for the print media industry in Indonesia and may impact a multi-national printing ink company that has a trading activity in Indonesia over the next five years. During FGDs, the driving forces were analyzed and grouped into clusters as illustrated in Figure 1.

The clusters show potential alternative futures to be shaped as a scenario framework. The extinct print media cluster and the limited optimism cluster are contradicting frames that help the research to create a contrasting future whose differences make a difference to decision-makers (Schwartz, 1991). In addition, the global ink group domination cluster indicates a dependency on the global supply chain which adds to the uncertainty that a company at a country level faces.

The massive use of digital technology, pandemic, changes in people's behavior, online journalism, and global penetration from digital-based companies will lead to extinct print media in the future. Digitalization is happening in various sectors and replacing the position of print media in delivering information, news, and knowledge to the public. The public is not only a media user but also a source of information in the media and it is free for anyone to share news online. In the current pandemic conditions, people are forced to maintain social distances, work from home, and long-distance learning, which prioritizes internet usage that is safer from viruses. Changes in people's behavior from conventional media to digital media will take place also as generations change. Global competition campaigns such as paperless issues give another impact on the weakening of the position of the print media in the future.

Experts believe that limited optimism about the sustained print media may happen over the next five years. The trust of the media community, both domestically and abroad, is the support for the print media as a part

Table 2: Driving forces involvement in Focus Group Discussions

No.	Driving forces	Scenario creation			
		Exploration FGD1	FGD2	FGD3	FGD4
1	The massive use of digital technology	✓		✓	✓
2	Pandemic	✓		✓	✓
3	Changes in people's behavior	✓	✓	✓	✓
4	Freedom of online journalism	✓	✓	✓	✓
5	Global competition from digital-based companies	✓	✓	✓	
6	Trust from media stakeholders, especially from the community	✓		✓	✓
7	Lean organization of print media	✓	✓	✓	
8	Government regulations in formulating the educational curriculum	✓	✓	✓	✓
9	Awareness of emerging health problems due to digital media consumption	✓	✓	✓	✓
10	Geopolitics			✓	✓
11	Global ink network support	✓	✓	✓	✓
12	Changes in market orientation	✓	✓	✓	
13	The existence profit as the last stand to support print media	✓		✓	✓
14	Availability of internet connection in remote areas	✓		✓	✓
15	The emergence of media convergence	✓		✓	✓
16	The need for environmentally friendly products	✓	✓	✓	
17	Investment in climate support from political parties through Omnibus law (2020)	✓	✓	✓	

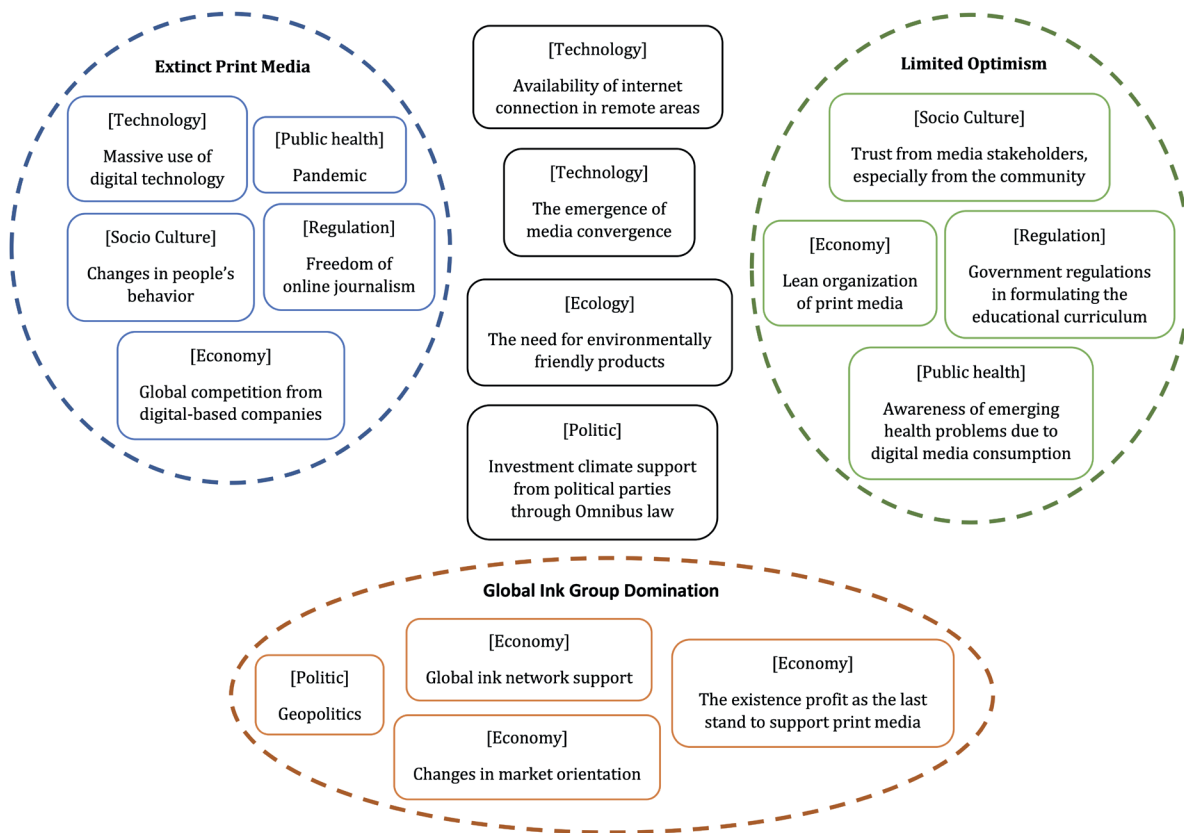


Figure 1: Driving force clusters

of media convergence. Print media companies are also trying to minimize losses by downsizing and restructuring their organizations. In the education sector, students still require printed books for studying especially for elementary, junior, and senior high schools, even in the current pandemic. Despite the government's effort to make electronic schoolbooks (so-called *Buku Sekolah Elektronik* or BSE in Indonesian term) available so that students can download them for free, it is less effective in regions with a poor internet connection and lack of access to computers or other digital devices. The printed version of the books is still preferable. The parents also limit their children in the use of the digital device as unhealthy behavior on the consumption of digital media will cause health complaints such as the influence of children's brain development, eye fatigue, and so on.

Experts recognize that the global ink group drives its subsidiaries to contribute to a global future. The local ink company is controlled by the global group where the materials still depend on global supply. As it relies on international trade, the geopolitical risk will create a level of supply stability worldwide. The global ink group will also observe the emerging print-on-demand market and growing packaging market. The global decision will also provide their subsidiaries at the

country level whether the company can continue and be the last stand that supplies the ink to the remaining print media industry.

Outside the three clusters, experts put other driving forces in the middle of the clusters. Availability of internet connections in remote areas and media convergence provide an uncertain future that may create limited optimism or lead to extinct print media. The trend of going green stops forest destruction as a raw material resource for the paper while managing hazardous and toxic waste may address both digital and print media. A similar case is for investment climate support. Omnibus law supported by political parties may also encourage digital technology adoption of startups as well as global ink supplier domination in the Indonesian market.

3.2 Scenarios creation

There were 16 driving forces identified in the initial exploration stage and one driving force, geopolitics, arose in the scenario creation stage when the experts reframed and challenged the initial scenario framework. The initial framework was constructed with two initial critical uncertainties based on expert team rank in appendix A. The two highest critical uncertainty

scores, pandemic, and global ink network support represent two factors that have high importance and high uncertainty so those are the potentially to be developed as an initial scenario framework for print media future.

The expert team tried to challenge the initial combination of pandemic and global ink network. It is realized that without the pandemic, the changes in people's behavior will happen as generations change. The pandemic factor is the only accelerator for the changes. Changes in people's behavior are one of the uncertain factors that have a high impact on the company. The combination of government regulation and the market that creates four scenarios in the emerging media trend exploration (Picha Edwardsson and Pargman, 2014) is less relevant in this research as digital disruption leads the media market to adopt advanced digital technology and government regulation will align with the technology adoption as well. Experts argue that regulation will follow the development of technology in the end. Digital disruption on transportation, for example, a startup called Gojek, was at first against the prevailing regulation on public transportation but in the end, the government allows them to be an alternative of public transportation in Indonesia.

The research describes global ink network support as the availability of global ink supply. From the supply chain perspective, a trading company is at much greater risk because the supply chain has become more interdependent, complex, and vulnerable to temporary or long-term disruption (Blos, Wee and Yang, 2010). The limited global ink supply happened in the current Covid-19 pandemic. The global ink supply chain faces a container shortage that incurs extra costs, delays, and difficulty in managing stocks. The company that relies on global ink supply, without having the ability to produce ink locally, fails to meet local ink demands. Local ink products may have a chance to establish their market and strengthen their position. Moreover, local governments always encourage industries to use local sources. Indonesia has a lot of resources that many industries can explore and exploit. Government policies such as high import tariffs or by nature of high exchange rates lead industries to utilize their local resources. The global ink supply term is more coherent in applying the scenario framework than a global ink network term. It offers a contrast of limited and widely available global ink supply. Limited global ink supply reflects the attraction of the use of local resources while widely available global ink supply reflects reliable global resources. This research proposes scenarios constructed by the interplay of the global ink supply chain and the changes in people's behavior that is relevant for a multi-national printing ink company with only trading activity in Indonesia. The scenario framework, illustrated in Figure 2, creates four

contrasting quadrants from the combination of global and local factors as well as the combination of supply and demand factors.

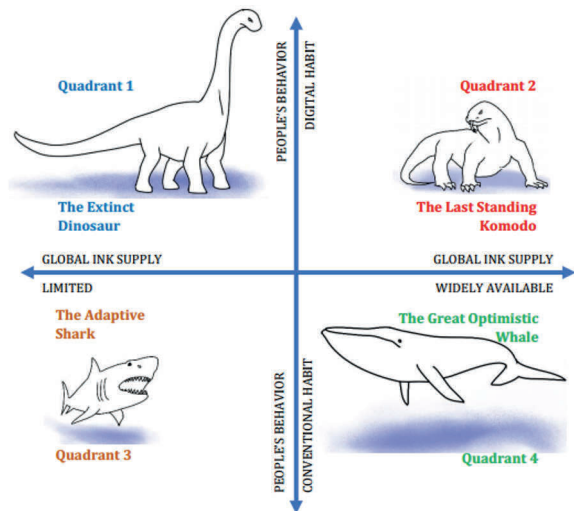


Figure 2: Scenarios of the future print media in Indonesia for a multi-national printing ink company

3.2.1 The extinct Dinosaur

Indonesian people are getting used to digital media and are leaving print media. Print media is becoming scarce. People only demand a few high-quality prints but the print media industry in Indonesia is unable to run its business. There is no certainty of high-quality ink supply even though the paper is still available. Long periods of global issues such as another new pandemic and geo-political tensions create obstacles to international trading. The global ink group prefers to secure ink supplies for the potential printing segment which can still thrive in the situation of limited international trade. Import activity becomes less as the government increases import tariffs or high exchange rates impact negative exposure. The extinction of print media is increasingly evident being eroded by the massiveness and development of digital technology adoption in remote areas. The government and private sectors work together to provide solutions to the lower society. The development of digital technology has succeeded in addressing the concerns of health problems and making it easier for the older generation to adapt. There will be no more newspapers, print magazines, print books, and print flyers. There are only digital news, e-magazines, e-books, and e-flyers. Print media will be remembered as part of the history of the past human civilization.

3.2.2 The last standing Komodo

The massive use of digital technology in Indonesia is supported by the increasing distribution of the internet network to the villages, the affordable ownership

of digital devices, and enabling people to easily access the internet. Society is increasingly connected one to another freely so that certain communities that have the same orientation are formed. Amid the long-term easing of geopolitics between countries in the world, global access is increasingly open. The community becomes a global force that shapes and maintains certain beliefs and values, including the existence of a global community that still respects print media as part of media convergence in the hustle and bustle of the digital world. The print media industry is lean and able to survive with the continued supply of high-quality inks and high-quality paper, moreover, the selling price is absorbed. The community specifically provides an environment for print media that offers exclusive value as a cultural heritage that needs to be preserved.

3.2.3 The adaptive Shark

Tensions exist at the global level and the national level. High geopolitical risks and other global issues over a long period have led to a fragile global ink supply chain. Domestic tensions also arise when the exchange rate is high and import tariffs limit local companies from importing ink or its raw materials from other countries. Indonesian people still require print media, but the ink is not available even though the local paper sources are still reliable. The development of local conventional print media ink still requires further research on the economic local resources of raw materials. Conventional printing technology is encouraged to meet the needs of print media. The production of local ink which has low quality can be an acceptable alternative for national print media users. Digital printing is coming into the picture of the race to offer technological solutions that are forced into a long run while its ink supply and the printing cost become a big issue. Digital inks have the same problem as conventional ink in terms of their import dependency. The fast adaptation of local printing ink technology, both digital and conventional, is the key to win in this competition.

3.2.4 The great optimistic Whale

People are still not satisfied with the use of digital media, especially in the education sector. The use of digital media is avoided because it is feared that it will interfere with children's development. Elementary to high school education is still constrained by an uneven internet network and the inability of the lower society to buy digital devices and their internet quota. The government is considered to be slow in overcoming this gap, while private investment is still very limited. The older generation still maintains their habit of using print media. The government realizes that print media is still needed by the people and provides room

for the sustainability of the media printing business. Long-term conducive global conditions also ensure the sustainable availability of imported ink and domestic paper. The Indonesian print media industry has great optimism that it will survive in certain sectors under the role of the government and take advantage of the lack of satisfaction with the use of digital media in these sectors.

3.3 Early warning signals

Some indicators can signal an emerging scenario. Recognizing these indicators will give early warning alarms to the company so that they are ready to implement corporate activity to fit the scenario. The early warning signals that distinguish one scenario from another are presented in Table 3. There are four indicators of changes in people behavior factors and three indicators of global ink supply factors.

The first indicator is the population who accesses the internet, and that the threshold percentage is 70 % of the total population of Indonesia. The Central Bureau of Statistics (BPS) Indonesia provides the percentage of individuals with access to the internet in 2019 is 47.69 % of the 244 million population aged 5 years old and above (Sari, Utoyo and Anggraini, 2020). Considering the productive ages of 15 to 64 years old, which is 181 million people in 2019 (Badan Pusat Statistik, 2020), the number of individuals in the productive ages who access the internet is low. People will be more dependent on digital media if all individuals in the productive ages access the internet that is around 74.18 % of the 244 million population aged five years old and above. The emergence of this digital habit may consider 70 % of the total population accessing the internet already.

The second indicator is the number of villages with strong signal receptions of cellular phones. This reflects internet access available in remote areas in Indonesia. BPS provides 58,194 villages or 69.33 % of total villages in Indonesia have strong signal receptions of cellular phones in 2019 (Sari, Utoyo and Anggraini, 2020). The more villages in Indonesia have strong signal receptions of cellular phones, the more chances to access the internet, and the more people depend on digital media. In the current state, it is not strong enough to declare that the majority of Indonesian people have access to digital media and many sectors still require the conventional way. Therefore this research proposes 80 % of total villages having strong signal receptions of cellular phones as the threshold percentage to reflect digital penetration in Indonesia. The increase from the current coverage state of 69.33 % to 80 % indicates a major shift that may have a significant impact on people's behavior.

Table 3: Early warning signals

Factor	Indicator	Source	Dinosaur	Komodo	Shark	Whale
Changes in people's behavior	The population who accesses the internet	Annual BPS publication	≥ 70 % (high)	≥ 70 % (high)	< 70 % (low)	< 70 % (low)
	Villages with strong signal receptions for cellular phones	Annual BPS publication	≥ 80 % (high)	≥ 80 % (high)	< 80 % (low)	< 80 % (low)
	Web printing machine installments in the last two years	Marketing team	none	none	1–6 units (rare)	> 6 units (many)
	Government project for printed books and papers	Marketing team	none	none	exist	exist
Global ink supply	Import tariff for print media inks	Government regulation	≥ 10 %	< 10 %	≥ 10 %	< 10 %
	Geopolitics	Government statements	hampered (high)	normal (low)	hampered (high)	normal (low)
	Raw material issue	Import planner	≥ 1 month	< 1 month	≥ 1 month	< 1 month

The third indicator is web printing machine installment in the last two years. The web printing machine is a representation of big print media volume. Rare installments of brand new or used web printing machines indicate the emergence of Shark scenario when the demand for print media is high, but the ink supply is less. Small quantity ink supply fits the small printing volume capacity of a sheetfed printing machine. It limits investment in web printing machines only for compromised lower print quality of large print media volumes such as black and white school books. The number of rare installments can consider up to six press units of web printing machines. When many web printing machines are installed, it indicates the emergence of Whale scenario that there is optimism on print media sustainability. The number of many installments can be considered more than six press units of web printing machines. If no printing machine was installed in the last two years, it indicates the emergence of digital habit that people are leaving print media consumption and switching to digital media. The company should record this activity by collecting data through the marketing team and its channels.

The fourth indicator is the existence of government projects for printed school books aid and papers. National elections require ballot papers, but if the government has adopted electronic elections using digital technology, ballot papers are no longer required. It is the same indication of the school books project. If the government has pushed the schools to utilize electronic books available on the internet, then students are more dependent on digital media. Current ballot papers and school book aid projects indicate people still have conventional habits. The company should be able to monitor and sense these signals from government officers or through the associations.

The fifth indicator is import tariff. Based on the minister of finance regulation no 6/PMK.010/2017 on stipulating the goods classification system and imposing import duty on imported goods, import duty of pigments and inks are in the range of 0 % to 5 %. Increasing import duty affects increasing ink price or absorbing the cost by ink company. Import tariffs of more than 10 % indicate local sources offer more attraction than global group sources.

The sixth indicator is geopolitics that involves the country where the mother plants are located. Big printing ink manufacturers are global players and raw materials such as pigments and resins are traded internationally involving both the US and China. The major suppliers of petroleum resins as the main print media ink vehicles are from the US, China, Vietnam, and France. Global companies with international trade with both the US and China will have the potential to face obstacles when there is trade war tension or direct bilateral conflict to one of them. Import and export activities have a chance to be hampered by high geopolitical risk.

The seventh indicator is a raw materials issue. The company should monitor the availability of ink supply from mother plants. Stock planners have to communicate intensively to mother plants and ask for clarification on any delays in dispatching. Mother plants' information on raw materials issues and difficulty in manufacturing are important to be noticed and indicate instability of global ink supply. This causes a bad ink stock shortage for the company. The emergence of a limited global ink supply may take more than one month to resolve raw materials issues.

As the future is dynamic, the company should monitor early warning signals. The company can appoint people in charge for capturing the population who

accesses the internet and the number of villages with strong reception signals of cellular phones from annual BPS publication, recording number of web printing machines installment every quarter, recording government projects existence for printed books and papers every semester, recording every movement of import tariffs, capturing every event of geopolitics that involves the mother plants' country, and capturing every event of raw material issues. The integration of monitoring emerging scenario signals to the company's activity will guide the company to always be on the appropriate track.

4. Discussion

4.1 Scenario implications and options

Each scenario gives its implications to the company and provides the available options that consider the current state of the company. The print media market tends to be stagnant in the Whale scenario while others indicate it has shrunk and even become extinct. The company has some options on each scenario where the print media market still can contribute to the revenue or focus on other markets such as the packaging ink market and the digital ink market to survive and grow.

The implications in Dinosaur are the loss of a significant source of revenue, the lack of reliable human capital and new technological knowledge, and the dissolution of a company by the parent company. The available options for the company are maximizing sales achievement in other market segments, developing local ink products, and exploring the chances of getting support from the other subsidiaries of the parent company to penetrate the potential market in Indonesia. Dinosaur challenges the development of local packaging ink that is one of the core competencies of the parent company. This core competency provides the ability of the company to explore and exploit the resources faster.

Komodo has similar people's behavior as Dinosaur but there is a community environment that sustains the special needs of high-quality print media supported by the global supply. There are decreasing revenue and hard competition on the shrinking print media ink market. The company may consider product diversification with three options. First, product diversification on conventional ink technology and continuing to supply the print media industry. Second, product diversification in digital printing ink supplied by other global digital printing ink manufacturers. Third, product diversification on both conventional and digital ink technologies. Many challenges arise in the Komodo scenario. The decision of being the last standing print media ink supplier in Indonesia challenges the global

cost leadership strategy. Product diversification on digital printing ink also is not easy as it requires new competency building for the company although the supply is widely available in the global network.

The uncertainty of the ink supply from imports in the Shark scenario can disrupt the business relationship and losing customers' trust. The company has difficulty competing with the local product from competitors. Regaining customer trust should be taken such as providing extra service to save ink usage, reuse leftover inks, and reduce print waste on a daily operational basis. Another option is establishing a local innovative R&D team that focuses on developing print media ink from available local resources. This local innovative product formulation from local resources is the challenge in the Shark scenario. It requires an R&D project collaboration and manufacturing activity for print media ink.

In the Whale scenario, the print media market tends to be stagnant while the parent company demands business growth. The price issue is the only selling point that can be played in the competition among media ink suppliers in Indonesia. The options are being a print media market leader with a cost leadership strategy, creating a business commitment, and customer engagement. The company may approach printing media companies who have international relationships that may provide export. Whale challenges to be a market leader in Indonesia for print media ink and expanding to the export market.

4.2 Strategic imperatives

The implications and options enable the company to formulate strategic imperatives that apply to most of the scenarios. A strategic imperative consists of activities that change the current state of the company to be better prepared for the future. This research proposes the strategic imperatives that will change the state of the company from insufficient R&D to innovative R&D, from selling conventional inks only to also selling digital inks, and from trading activity to manufacturing activity. The strategic imperative activities also are required to be adapted as the emergence of the scenario. An annual management meeting determines the situation based on the monitored signals and which adjustments the company should make to the strategic activities that are summarized in appendix B. The company is expected to be ready to face any scenario that happens and continue to grow and perform at the end of or after five years.

4.2.1 Innovative R&D

Investment in human capital becomes important and contributes to growth. People's knowledge in the company becomes tangible as well as intangible resources

that can be captured, stored, and shared to produce the innovation. A successful R&D team not only generates innovative ideas but also transfers these newly created concepts through the organizational system for economic gain (Thamhain, 2003). Recruiting R&D people who have expertise in packaging technology for both offset printing and gravure printing is necessary. The company should provide R&D facilities to support the research projects. The R&D team collaborates the research projects with other parties such as graphics schools and universities for local development projects.

In the first year, the company forms an R&D team by recruiting experienced people from other competitors. The R&D team should be able to handle a research project on conventional ink formulation of both print media ink technology and packaging ink technology. Basic laboratory instruments should also be provided, whatever the scenario emerges. In the following years, team building and specific laboratory instruments purchasing will refer to the scenario. Dinosaur or Komodo lead R&D project on packaging ink technology while Shark or Whale lead R&D project on print media ink technology. Collaborative research projects with other parties such as graphic schools and universities also follow the same direction.

4.2.2 Product diversification

Product diversification enables the company to serve the broader market even though it requires building a new core competency for the company. The performance of product diversification may be contingent both on the specific home country environment and time period (Benito-Osorio, Guerras-Martin and Zuñiga-Vicente, 2012). The abundance of natural resources in Indonesia and the five year period provide a chance for the company to perform local product diversification. As the future challenges of the print media in Indonesia are very dynamic, the company must have dynamic capabilities that do not only offer print media inks but also packaging inks and digital printing inks to the markets.

Assessing potential domestic ink markets and global suppliers for new ink markets is conducted in the first year and the third year whatever the scenario emerged. This includes feasibility studies to support business proposals on product diversification for the following years. The business proposal includes conventional ink market development by global ink supply and a new digital ink market development by a partnership with a global digital ink manufacturer. In the second year, if the scenario is Whale or Komodo, the company can generate stocks for new conventional ink products immediately from the global ink supply. If the scenario is Dinosaur or Komodo, it will need further

study to prepare a partnership agreement and ask for the parent company's approval. This partnership activity can only be implemented in the third year if there is any Dinosaur or Komodo signal.

4.2.3 Local ink manufacture

Local manufacture will secure continuity in ink supply to customers; moreover, the local R&D team works on local resource consumption. Design global-manufacture local (Kostakis, et al., 2015) can also be considered in conventional ink manufacturing as the global ink company has its global ink technology while local markets have local varieties of printed products. The company can propose a local manufacturer for offset printing ink or gravure printing ink after the R&D team shows the progress of the research project on it. The proposal includes the option of partnership with a local ink or paint manufacturer for production facilities only or building own ink production facilities.

There will not be any local ink manufacturing activity in the first two years. The only possible time to establish a local ink production is in the third year if there is a positive result from the R&D team in terms of local ink formulation. It will be difficult to be ready for future challenges in the next five years if establishing a local manufacturing facility starts in the fourth and fifth year. This activity only applies to Dinosaur, Komodo, and Shark scenarios. If the Dinosaur signals are strong and the R&D team has been successful in a local packaging ink formulation, then a local ink manufacturing facility can be proposed to the parent company and start to be executed after their approval. If Komodo signals emerge in the third year, the local ink manufacture will open to produce finished ink from the intermediate product supplied by global ink manufacturing in case of local R&D projects fail to search economic raw materials locally. If the Shark emerges in the third year and R&D has been successful in a local print media ink formulation, then a local ink manufacturing facility can be proposed to the parent company and started to be executed after their approval as well. This activity required a strong sense of early warning signals in the third year.

5. Conclusions

The focal issue of this research is how digital disruption in the print media industry in Indonesia will affect a multi-national printing ink company over the next five years. Scenario planning development identifies many driving forces and creates some alternative frames for future digital disruption. Four scenarios are constructed by a combination of limited or widely available global ink supply and the changes in people's

behavior from conventional media to digital media. The extinct Dinosaur describes the domination of digital technology and the print media industry no longer exists anymore. The last standing Komodo describes a small room in the high-quality print media industry supported by its community amid a full digital lifestyle. The adaptive Shark describes the innovative pace of resolving imbalanced supply and demand in print media. The optimistic Whale describes limited print media sustainability amid the failure of digital technology to serve public needs.

Through scenario planning development, the company can realize the future implications and prepare the strategy to face it. Three strategic imperatives should

be conducted by the company to address future digital disruption in print media in Indonesia. Those are local innovative R&D building, product basket development for both conventional packaging and digital printing inks, and business activity expansion from trading to manufacturing. The strategic imperative activities also are required to be adapted based on monitored signals and which adjustments the company should make to the strategic activities. The company may introduce this scenario planning approach to the parent company and propose to use it as a basis of the company's strategy. Scenario planning development can be implemented globally to have the ability to adapt quickly or build new scenarios when facing emerging risks and crises at the global, regional, and country-level.

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Appendix A: Driving force rank

No.	Driving forces	Uncertainty score	Impact score	Critical uncertainty score
1	<i>Pandemic</i>	31	30	61
2	<i>Global ink network support</i>	24	33	57
3	The existence profit as the last stand to support print media	26	29	55
4	Freedom of online journalism	21	33	54
5	The need for environmentally friendly products	24	30	54
6	Investment climate support from political parties through Omnibus law	24	30	54
7	The massive use of digital technology	18	35	53
8	Global competition from digital-based companies	17	36	53
9	Availability of internet connection in remote areas	18	35	53
10	The emergence of media convergence	20	33	53
11	Lean organization of print media	22	31	53
12	Government regulations in formulating the educational curriculum	21	32	53
13	Changes in people's behavior	18	34	52
14	Trust from media stakeholders, especially from the community	23	29	52
15	Awareness of emerging health problems due to digital media consumption	27	25	52
16	Changes in market orientation	15	35	50

Driving force rank was conducted by distributing a questionnaire to the expert team based on the second FGD. There were nine respondents. The scores are calculated based on the degree of uncertainty and the degree of impact on every driving force as follows:

1 = Low

2 = Low to Moderate

3 = Moderate

4 = Moderate to High

5 = High

Uncertainty score and impact score could range from 9 (as the lowest) to 45 (as the highest)

Critical uncertainty score from 18 (as the lowest) to 90 (as the highest)

Appendix B: Activity plan on strategic imperatives

Strategy	Activity	Year				
		1	2	3	4	5
General	Monitoring early warning signals	DK SW	DK SW	DK SW	DK SW	DK SW
Building innovative R&D	Forming R&D team	DK SW	DK SW	DK SW		
	Providing R&D facilities	DK SW	DK SW	DK SW		
	Collaborating R&D projects with other parties		DK SW	DK SW	DK SW	DK SW
Developing product basket	Assessing potential ink markets in Indonesia including a feasibility study	DK SW		DK SW		
	Assessing global suppliers for new ink markets including feasibility study	DK SW		DK SW		
	Proposing product diversification plan including the choice of inhouse development or strategic alliances through a partnership		DK SW	DK SW	DK SW	DK SW
	Establishing partnership agreement with global digital ink manufacturer and local packaging ink company (in case of partnership for the saleable product)			DK S	DK S	DK S
	Generating stocks for new conventional ink products provided by global group (in case of in-house development)		K W	K W	K W	K W
Establishing local manufacture	Proposing local manufacture plan including the choice of inhouse development or strategic alliances through partnership or acquisition of a local ink manufacturer			DK S	DK S	DK S
	Establishing partnership agreement with other ink or paint manufacturer (in case of partnership for production facilities)			DK S	DK S	DK S
	Establishing acquisition process of a local packaging ink manufacturer (in case of acquisition)			DK S	DK S	
	Establishing local conventional ink manufacture including licenses, human resources, infrastructure, and equipment (in case of in-house development)			DK S		

Remarks: D = Dinosaur, K = Komodo, S = Shark, W = Whale