

DIGITIZING IN BUSINESS MODEL INNOVATION: PRELIMINARY RESEARCH OF COURIER, EXPRESS, AND PARCEL SECTORS

CHARLES SITORUS¹, IDRIS GAUTAMA SO², ASNAN FURINTO³, WIBOWO KOSASIH⁴

¹Doctor of Research in Management, BINUS Business School, Bina Nusantara University Indonesia

²BINUS Business School Undergraduate Program, Bina Nusantara University Indonesia

Email: ¹charles.sitorus@binus.ac.id, ²igautama@binus.edu, ³afurinto@binus.edu,
⁴wibowo.kosasih@binus.edu

ABSTRACT

This study aims to identify digital business model innovations carried out by Indonesian courier service companies to meet customer needs. This research also uses three case studies and several references or previous research as the main data sources. This study uses a qualitative approach with the Historical method, with the sampling method used is a purposive sample with three case studies at DiDi Taxi, Cisco, Dell companies. This study found that e-commerce needs to make some innovations in adjusting to the needs of today's customers, especially in the era of digitalization. Some of the innovations that can be done consist of product terms, service features, customer satisfaction, involvement in the e-commerce marketplace, and in terms of delivery patterns. Based on this, this study designs several recommendations based on crucial issues that need to be studied further from the issue of digital business innovation models in Indonesian courier service companies. The results of this study are expected to be able to recommend several crucial issues that need to be studied further from the issue of digital business innovation models in Indonesian courier service companies. Therefore, this review is expected to initiate further research related to the scope of the research.

Keywords: *Digitalization, Business Model Innovation, Case-Study, Courier, Express, Parcel Sectors*

1. INTRODUCTION

In phrases of transportation, alternate, and banking, the phenomena of the 4th business revolution have shifted the commercial machine's order from a swiftly increasing era to a virtual era (Sia, Soh and Weill, 2016). Digitalization, also called virtual transformation, has ended in widespread modifications in enterprise patterns, aided through the improvement of a number of helping technologies (Xu Thong and Tam, 2017). In the alternate sector, e-trade is a form of virtual change. The system of product promotion, purchase, and advertising is finished immediately or face-to-face on this alternate (Turban, 2010). The machine hired through digital media, which include tv and telephone, is now extra every day through the net, is one of the hallmarks of this alternate version.

Merchant Machine, a British studies institute, posted a listing of the 10 international locations with the fastest-developing E-Commerce withinside the

globe. Indonesia, which grew at a fee of 78% in 2018, is at the pinnacle of the listing. One of the reasons propelling the enlargement of E-Commerce is the variety of net customers in Indonesia, which exceeds one hundred million. Indonesians spend a median of US\$ 228 in keeping with individual on online shopping for sites, or kind of Rp 3.19 million in keeping with individual.

The fast growth withinside the use of smartphones is one of the riding elements for the improvement of E-Commerce in Indonesia. Smartphones are some distance much less luxurious than PCs and laptops, making them available to the bulk of Indonesians. According to a McKinsey evaluation from 2018, around 70% of the country's net customers are phone customers. They additionally cited that cell phones are utilized by over 75% of online buying in Indonesia.

According to McKinsey (2018), the E-Commerce atmosphere interacts with numerous sectors to ensure they go with the drift of products

and information. Brands, structures, advertising, payments, and shipping offerings are all involved. According to E-Commerce IQ (2017), e-trade structures in Indonesia are labeled into 4 types: enterprise-to-enterprise (B2B), enterprise-to-consumer (B2C), consumer-to-consumer (C2C), and peer-to-peer (P2P) (P2P). B2B is an enterprise-to-enterprise version that makes a specialty of supplying merchandise from one enterprise to another. B2C is an e-trade transaction, much like the conventional retail version, that an enterprise sells products or services to individuals, however, the online platform has its very own inventory of products. C2C is an internet market that connects dealers and buyers. Moreover, peer-to-peer (P2P) is an internet shopping for and promoting media without using a market, generally through social media.

Courier, express, and parcel services are one industry that plays an important role in the process of moving goods from one player to another in the E-Commerce ecosystem. According to the McKinsey report (2018), the delivery service industry in Indonesia has grown in recent years. This is bolstered further by Indonesia's rapid expansion of online commerce.

Technological developments have also modified the pattern of the courier service business, which at the start centered on causation letters, postcards, or personal packages. The BCG report (2020) notes that sending letters and postcards small drastically (down -20%) together with the event of SMS, Email, courier technology, and even WhatsApp or Telegram. However, technological developments have also created new business potential within the courier service industry, with the increasing range of transactions via E-Commerce, which requires delivery of products or courier services (Growing +140%). Additionally, to E-Commerce, the potential for the delivery service business can even return from personal shipments or company shipments. However, of the various delivery service players today, the biggest market comes from E-Commerce.

The BCG report (2020) additionally well-known shows that presently in Indonesia there are numerous transport offerings corporations, each from inside and out of doors the country, in addition to numerous transport offerings that are fashioned with the aid of using E-Commerce. Although the improvement of E-Commerce will increase the call for the transport of goods, now no longer all courier carrier corporations are capable of solving this need. There is an exciting phenomenon as defined with the

aid of using the Enciety Business Consult Report (2020) in Figure 1 below.

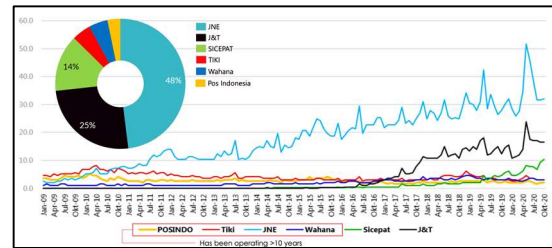


Figure 1. Trends in Delivery Service Performance in Indonesia Source: Enciety Business Consult Report 2020

Based on the facts above, JNE became capable of enjoying a massive boom within the ultimate decade from the wide variety 3 marketplace proportion to the primary marketplace proportion. While PT Pos, which initially became the wide variety marketplace proportion, has become wide variety six. This phenomenon is nearly similar to PT Pos skilled through TIKI, which first of all held the primary marketplace proportion, presently most effective holds the 5th rank marketplace proportion. On the alternative hand, new groups, inclusive of JNT, display a massive boom phenomenon, in only four years they have got received the second one marketplace proportion, even SiCepat, which has most effectively been working for nearly three years, already has the 0.33 marketplace proportion.

Based on the literature evaluation through the Litmaps software, the problem of digitizing the courier carrier enterprise started to be studied around 2001 through King et al., through their study "System and approach for sending e-mail and parcel shipping notification the use of recipient's identity information". This study makes a specialty of digitizing the shipping notification machine thru technology. Since then, studies associated with digitalization troubles in courier carrier groups have started to boom rapidly. This fashion may be visible from the instance of the boom of the studies context at the subject matter of digitizing courier services.

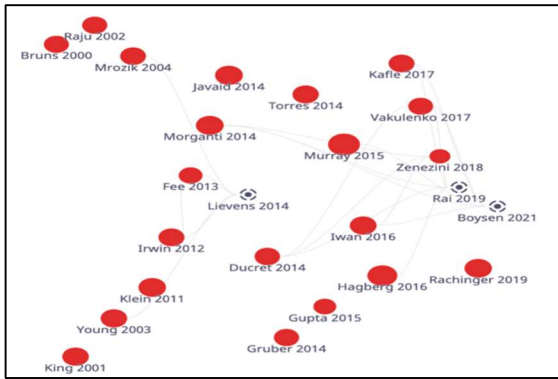


Figure 2. Trends in the scope of research related to the digitization of courier service companies Source: Litmaps, 2021

Most researchers look at the techniques and structures of courier carrier agencies that are remodelling from traditional to virtual or modern. This evolution is likewise the effect of technological advances, which have started to penetrate nearly maximum countries (Rachinger et al., 2019; Zenezini et al., 2018; Iwan et al., 2016; Vakulenko et al., 2017). Their take a look at is likewise very applicable thinking about that till now, digitization of courier carrier agencies continues to be occurring in numerous countries, along with Indonesia. The effects of this take a look at may be beneficial for enterprise actors and teachers to recognize the improvements and techniques wished via way of means of courier carrier agencies in dealing with marketplace demand, that is usually virtual society.

Business opposition on this quarter is stimulated via way of means of diverse factors, each inner and external. However, the facts above display how a few courier carrier agencies have problem shooting possibilities from the boom of e-commerce. The innovation of the shipping carrier company organization to conform to the wishes of clients and the marketplace is assumed to be one of the causes. Therefore, this preliminary take a look at goals to pick out virtual enterprise version improvements performed via way of means of Indonesian courier carrier agencies to fulfill patron wishes. This study additionally makes use of 3 case research on DiDi Taxi, Cisco, Dell, and numerous references or preceding studies as the principle facts sources. The effects of this take a look at are anticipated with a purpose to advocate numerous critical problems that want to be studied in addition from the difficulty of virtual enterprise version innovation in Indonesian courier carrier agencies. Therefore, this evaluation is anticipated to provoke additional studies associated with the study's scope.

2. LITERATURE REVIEW

2.1. Courier, express, and parcel services (CEP)

Globalization quickens the boom of e-trade because of transferring traits among dealers and customers and influences the evolution of logistics companies. This phenomenon additionally encourages the boom of courier, express, and parcel (CEP) offerings (Gath, 2016; Kummer et al., 2021). Courier commercial enterprise is largely the commercial enterprise of turning in items or files completed via way of means of people or companies. The emphasis on this feel is primarily based totally on the form of provider provided, specifically transport offerings from one place (sender) to another (recipient). The position of transport offerings withinside the e-trade surroundings is mainly proven withinside the following figure:

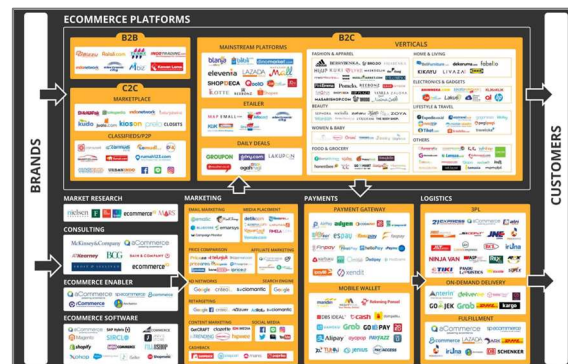


Figure 3. Indonesian E-Commerce Landscape Source: E-Commerce IQ, 2017

2.2. Digital Model Business Innovation

The idea of a commercial enterprise version has an extended history (Wirtz, 2016), the literature notes that there are 3 distinct theoretical tactics to the idea of a commercial enterprise version: facts technology, organizational theory, and approach theory. In addition, Bieger et al. (2002) explains that there are eight theoretical tactics in commercial enterprise version development. These eight theoretical tactics consist of cooperation idea, coordination idea, increase idea, competence configuration, sales idea, overall performance system, communicate idea, and company form. Meanwhile, MacInnes and Hwang (2003) determined that the literature on commercial enterprise fashions may be divided into categories: first, sorts and traits of commercial enterprise fashions, and second, additives of commercial enterprise fashions. MacInnes and Hwang (2003)

upload that commercial enterprise version innovation could be very critical for the achievement of an organization.

Gassmann (2014) explains that commercial enterprise version innovation is an integration of numerous dimensions of excellence variables that exist inside an organization. Variables of excellence including product quality, pace of service, famous brands, and others cannot be presented in part to customers. All those dimensions want to be packaged in an incorporated way so that you can produce extraordinary commercial enterprise effects. This commercial enterprise version innovation includes four essential dimensions that want to be recognized within the organization, including consumer focus, fee proposition, fee chain, and income version.

Business version innovation, in line with R. Amit & Zott (2010), emerges as an opportunity for technique and product innovation, wherein managers and marketers create extra fees within a selected time. Wirtz et al. (2016) said that the commercial enterprise version is an aggregate of the applicable sports of an organization in order that facts, products, and/or offerings may be produced and advertised thru the organization's fee-introduced additives. In relation to digitalization, Eksell & Harenstam (2017) give an explanation for that commercial enterprise version innovation is described as digitizing sports toward present techniques to change, create new answers (Innovate), and make enhancements to present answers Eksell & Harenstam (2017).

Wirtz (2019) explains that there are three essential elements for virtual commercial enterprise version innovation, namely: technological developments, dynamic markets, and extreme competition, and converting customer needs. Furthermore, there are 2 varieties of virtual version commercial enterprise innovation, which include fee constellation innovation and fee proposition innovation. Claus (2016) formulates a commercial enterprise version innovation size approach that divides into three corporations primarily based on the effects of a literature review, including:

- Value Creation Innovation is defined as how and in what ways companies create value along the value chain using organizational resources and process capabilities (Achtenhagen et al., 2013; According to Matzler et al., 2013; Claus, 2016).
- Value Proposition Innovation is influenced by several factors, including offering new products or services, segmenting new markets and customers, new sales channels, and

building new customer relationships (Morris et al., 2005; Johnson et al., 2008; Claus, 2016).

- Value Capture Innovation is defined as how the value proposition is converted into revenue (Johnson et al., 2008; Teece, 2010; Baden-Fuller and Haefliger, 2013; Claus, 2016).

According to Plattfaut et al. (2015), digitalization can aid innovation sports inside an organization, using expertise and thoughts from employees. Kohli & Grover (2008) kingdom that studies on virtual effect desires to be improved from the modern-day single-employer awareness to digitalization-primarily based totally price co-creation. Björk and Magnusson (2009) upload that inter-organizational IT can assist to have interaction influences "from outdoor the bounds of the organization", for example, thoughts and outside expertise from companions or customers, into provider innovation sports. Furthermore, Hutter et al. (2011) give an explanation for that on-line innovation efforts, along with digital contests, generate the exceptional ability for businesses to come across innovative thoughts from outside experts (along with customers) and similarly offer a platform for dialogue and collaboration with outside parties.

3. METHOD

This observation uses a qualitative technique with historic methods, which might be the simple methods to social science (Hall, 2005; Mohajan, 2018; Malhotra, 2006). This technique is performed with the aid of using systematically gathering statistics via numerous sources. Secondary statistics consist of online media articles, clinical writings, and different literature. Furthermore, this observation translates and logically explains problems associated with virtual commercial enterprise version improvements performed with the aid of using Indonesian courier carrier companies (Mohajan, 2018). The sampling technique used is a purposive sample (Sugiyono, 2019) with 3 case research at DiDi Taxi, Cisco, Dell.

4. RESULT

Through their research, Kim and Min (2015) show that companies that add new business models can improve their company's performance. He described several innovations made by Indonesian courier service companies to meet the needs of customers for courier services, both senders via e-

commerce (B2C, C2B2C, or P2P) and non-e-commerce senders.

(1) In terms of products, currently, delivery service companies have different products. Data from the BCG Report (2020) shows that currently there are at least 3 product categories offered by Indonesian courier service companies, including Same Day, Next Day, and Deferred services. The development of E-Commerce and technology makes customer needs also change. The report from BCG (2020) also states that customer needs for delivery of goods have changed with various choices, but these changes generally cannot be served by courier service providers in Indonesia at this time. Changes in customer needs include the following:

- Same Day shipments are predicted to contain 5% of the total needs of all shipments, but this will create new fintech-based players if the delivery service company ignores this market segment
- Special shipments on Sundays, which are predicted to grow by 5-10%
- Special post in the evening, which is also predicted to grow by 5-10%. This delivery can certainly provide additional income due to special shipping requests
- Time Window, delivers goods at a specific time according to customer needs, for example, sent to Office A at lunchtime. This need will help customer needs, but of course, it requires a lot of shipping power
- Deferred, namely the delivery of goods that have been determined from the beginning of the delivery period from the delivery service provider, generally 2-3 days.

To be able to control product quality, digitalization is a must so that the services provided are in accordance with customer needs. This is in line with Werner (2019), who stated that digital transformation capabilities consist of microfoundations, one of which is related to providing direction for the development of innovation and redesigning the internal structure.

(2) In terms of service features, currently, customer needs for service features are growing very quickly. This feature answers the pain points of both the sender and the receiver. The CNN survey (2020) explains some of the features that customers need in choosing a delivery service provider. The Free Pick-Up Services facility makes it easy for senders, generally, E-Commerce sellers to send their

goods, especially for sellers who have more than one shipment (generally 50-100 items per one post). In addition, the sender (Seller) also needs a Cashless solution as a slow cashflow turnover solution. From this point of view, the recipient (generally the buyer) expects certainty of delivery of the goods transacted, so the COD feature is one of the solutions needed where the new recipient will pay for the shipment if the goods have been received. In addition, buyers also need discount facilities as a solution to the high shipping costs.

However, currently not all delivery service companies provide Free Pick-Up, Cashless, COD or discount services. For example, JNE can provide discounts to its customers but not provide free pick-up services, whereas PT Pos Indonesia provides free pick-up services but cannot provide discounts to customers. COD services in Indonesia have also decreased by 25% (BCG Report 2020), one of which is because COD is not a top priority for courier service companies in Indonesia.

Adjusting service features requires digitization such as COD applications, track and trace, pick up on demand, cashless services, dynamic tariff models and so on, which ultimately changes the company's business processes. This is in line with Yoo et al. (2010), which defines digital innovation as a new combination of digital and physical components to produce new products and services.

(3) In terms of customer satisfaction, the iPrice Group Survey (2019) showed that 44.3% of consumers expressed dissatisfaction with their E-Commerce delivery experience. The quality of the delivery experience these days greatly affects customer satisfaction and benefits. Since customer satisfaction is the key to loyalty, optimizing the delivery experience is crucial to increasing the benefits that customers receive. When comparing countries, Singaporean, Thai, and Vietnamese consumers are more satisfied with their E-Commerce delivery experience compared to Indonesia and Malaysia.

In addition, more than 90% of customers filed complaints and negative responses regarding delays in delivery and lack of communication about delivery status. Lack of communication in the delivery status of the package, with some complaints about the quality of the operator's service (whether the package was damaged in transit and the quality of the operator's service). Positive responses are usually shorter, with

some customers using stickers (emojis) to communicate. In contrast, negative responses are more comprehensive, more emotional, and long-lasting. Customers are open to leave compliments and detailed feedback to improve operator quality. If the logistics operator can show that they really receive a negative response, the customer is willing to definitely give a response.

Digitization is needed to control customer satisfaction through an adequate Know Your Customer (KYC) application. The use of Big Data is crucial in managing the customers of a delivery service company. This is in line with Fitzgerald et al. (2014), which defines digital transformation as the use of new digital technologies (social media, mobile, analytics, or embedded devices) to enable significant business improvements, such as creating new business models, streamlining operations, or improving customer experiences.

- (4) In terms of involvement in the E-Commerce marketplace, the BCG Report (2020) explains that it is undeniable that the largest transactions for delivery services companies currently come from E-Commerce transactions. However, of the 519 courier service companies (based on data from the Indonesian Delivery Service Companies Association), only a small number serve E-Commerce Marketplace transactions. Poxel and Anteraja are courier service companies involved in only one marketplace but can generate significant growth in company performance. This is in contrast to PT Pos Indonesia, which is almost involved in almost all marketplaces but has recorded a decline in performance in recent years.

Digitization is needed so that the courier service company is able to communicate effectively and efficiently with the E-Commerce marketplace through an adequate API application. This is in line with Liu et al. (2011), who argue that digital transformation is an organizational transformation that integrates digital technology and business processes in the digital economy.

- (5) In terms of delivery patterns, currently, all courier service companies in Indonesia still use human labor to make deliveries. Technological developments and delivery innovations, such as drones, have not yet been implemented. Even parcel locker technology is still limited. The use of human resources for delivery is also different for each company. PT Pos Indonesia, >90% use organic workers as shippers, which

of course is very costly because the basis is fixed cost. This is different from other delivery service companies that use partnerships so that it is based on variable costs.

Digitization of business models is needed to improve the quality of delivery by not only using human labor, the development of technologies such as drones and AI robots. This is in line with Bharadwaj et al. (2013), which states that Digital technology (a combination of information technology, computing, communication, and connectivity) is fundamentally changing business strategies, business processes, enterprise capabilities, products and services, and key inter-enterprise relationships in business networks.

5. DISCUSSION

5.1. Digital Model Business Innovation: Courier, Express, And Parcel Services

The delivery service market is wide open, and technology has developed rapidly and has become an industry standard, so the innovation of the delivery service is expected to be able to encourage the achievement of performance in terms of financial, operational or company market value. So that sustainable innovation performance is a must for companies, especially in the current digitalization era, as is the case with start-up companies such as Gojek, Tokopedia, or Traveloka. This is in line with what Calik (2016) explained that the sustainability of innovation performance, which is the development and renewal of products, services, technology, or organizational processes, not only provides economic benefits but also has a positive impact on social and environmental issues.

Research by S. K. Kim & Min (2015) shows that companies that add new business models can improve performance. In addition, Kiron et al. (2013) explained, an important factor for the sustainability of business profits is business model innovation. Hence, the application of business model innovation is one of the factors that can improve the performance of the delivery service company. Wirtz et al. (2016) stated that the business model is a combination of the relevant activities of a company so that information, products and/or services can be produced and marketed through the company's value-added components.

In relation to digitalization, business model innovation is defined as the activity of digitizing the current process to change, create new solutions

(Innovate), and make improvements to current solutions (Eksell & Harenstam, 2017). Wirtz (2019) explains that the three main drivers of digital business model innovation are technological developments, dynamic markets and intense competition, as well as changing consumer needs. There are two types of digital model business innovation, which consist of value constellation innovation and value proposition innovation. Value constellation innovation is a business model innovation by replacing or redesigning the company's business constellation values, while value proposition innovation is a business model innovation by replacing or redesigning the company's value proposition. The process of developing a digital model business innovation starts from the process of situation analysis, idea creation, feasibility study, making prototypes, decision making, implementation, monitoring and evaluation, as well as maintaining the sustainability of the innovation. Finally, the impact of implementing business model innovation makes the current market and industry disrupted, but on the other hand, creates a new market.

5.2. Digital Model Business Innovation Case Study

This study uses three case studies taken from previous research that discusses various corporate strategies in implementing digital business model innovation. Some of the case studies include the following.

- a. DiDi Taxi (Dynamic Capability)
Didi Chuxing Technology Co., formerly Didi Kuaidi, is a Chinese ride-hailing, artificial intelligence, and autonomous technology conglomerate. The Beijing-based company provides taxi-hailing, private car rental, ride-sharing, bike-sharing, and food delivery services in China via a software application. DiDi was formed from the merger of Didi Dache and Kuaidi Dache (funded by China's two largest Internet companies, Tencent and Alibaba, respectively). Fortune report (2018), DiDi in June 2016 was worth approximately US\$28 billion. DiDi acquired Uber's China branch in the same year. In December 2017, DiDi received an injection of US\$4 billion and became the second highest valued startup in the world (after Ant Financial) with 100 investors and a valuation of +US\$56 billion. The company now serves 30 million deliveries per day.

Lin et al. (2020), in their research, explained that compared to traditional companies, DiDi Taxi, a platform-based company, faces more uncertainties, including a faster-changing technology environment, lower barriers to entry, and intense competition, and is much easier to imitate. On the one hand, the factors that have led to rapid development include the technological revolution, market globalization, uncertainty in consumer preferences, constantly changing industries, and the institutional environment. On the other hand, the interaction between various factors makes the competitive environment more complicated. In order to be flexible and maintain a competitive advantage in a dynamic environment, DiDi as a platform company cultivates dynamic capabilities to overcome core rigidities and continuously innovate business models. Dynamic capabilities drive business model innovation which has different guiding effects on dynamic capability development.

- b. Cisco (Adaptive Product)

Cisco is a leading global network equipment company that provides a diverse range of products such as routers, switches, and network solutions for large enterprises and small businesses in various sectors.

Cisco has traditionally used the waterfall method to develop new products. In the waterfall method, tasks and deliverables are clearly visible at every stage of the product development process; however, the whole development process can be lengthy. The waterfall method usually begins with various analytical reports (e.g., business requirements document, product requirements document, marketing requirements document) that assist in creating development tasks, which are then submitted to the development team. The team undergoes various product tests before launching the product to the market. From start to finish, the process could take approximately 18 months or more. In a fast-changing environment, such a long development cycle can cause the product to become obsolete when the product is introduced to the market.

Cisco is changing the pattern of development that is agile and adaptive, and the company is no longer going through a long and comprehensive analysis at first, and, as such, the planning period is much shorter. At Cisco, business units that use agile methods have a

major product release each quarter. Product development is separated into sprints within each quarter, with the duration of each sprint lasting for two weeks. Product managers present new features to clients and get feedback after each two-week sprint. As a result, the agile development process is more market-oriented and faster. However, it also involves more change and uncertainty.

c. Dell (Customer Requirement)

Dell, Inc. (NASDAQ: DELL) is a company based in Round Rock, Texas, United States, manufacturing and marketing computer hardware (mostly IBM clones). Most of its market is in personal computers, but Dell also sells servers, data storage devices, network switches, and computer clusters for enterprises. Desouza et al. (2015), in their research, explain that Dell develops business model innovations, one of which is based on the needs of its customers. Dell released a business model they call "Direct Mode", which recognizes two trends in today's emerging market, namely that standardization of PC components allows Dell to outsource manufacturing processes (except assembly) and customer sophistication in PC technology and the convenience it offers.

Due to these factors, Dell chose to create a value chain that allows for direct engagement while also providing consumers with additional options and the flexibility to personalize their purchases. The direct approach offers considerable advantages, in terms of customer information management, in addition to the technological and financial advantages that emerge from fewer inventory expenses. Dell has a higher chance of finding customer demands as it can directly communicate with customers.

In addition to the three case studies above, there are other studies on business model innovation and the sustainability of innovation performance. The results of previous studies can be grouped as follows:

a. *Factors Affecting Innovation Performance*

Based on previous research such as Boh et al. (2020); Wang & Hu (2020); Adams et al. (2019); Hanifa et al. (2019); Li et al. (2019); Mardani et al. (2018); Mennens et al. (2018); and Wirtz (2019), factors that influence the success of innovation performance include: Human capital, Culture, Investor Experience, Knowledge management, Business model,

Dynamic Capabilities Employee Collaboration.

From the literature, one of the factors that influence the success of innovation performance is the business model, but those that specifically discuss business model innovation related to digital, which is indispensable in the digitalization era, are still very limited. Based on this, the author tries to make a contribution through the exploration of digital business model innovation, and what forms of Digital BMI are needed by delivery service companies in order to maintain the continuity of innovation performance. This is in line with the opinion of Wirtz (2019), which states that one of the key success factors that companies must build to achieve success in digital-based business development is the ability of digital innovation.

b. *Industry Sector Research Innovation Business Model*

Based on previous research such as Geissdoerfer et al (2018); Leitão et al. (2019); Evan et al. (2017); S. K. Kim & Min (2015); Kiron et al. (2013); and Chesbrough (2002) research on the effect of business model innovation on company performance is more focused on industrial sectors: Finance, Health, Manufacturing, Technology, or logistics. Meanwhile, research related to the delivery service industry is still very minimal, including in Indonesia. So, the author tries to contribute by conducting research on business model innovation, especially in the digital era, and its influence on the sustainability of innovation performance in the delivery service industry in Indonesia. So that it can provide a more in-depth explanation of the influence of digital model business innovation on the sustainability of innovation performance in the delivery service industry in Indonesia.

c. *Impact of implementing Business Model Innovation*

In previous studies, research on business models was generally studied to see the impact on the company's financial performance. Geissdoerfer et al. (2018); Wirtz et al. (2016); S. K. Kim & Min, (2015); Kiron et al. (2013); Chesbrough (2002), and research specific to sustainable innovation performance is still lacking. So the researcher considers it necessary to specifically explore the company's performance in terms of sustainable

innovation. This is reinforced and strengthens the research of Aguilar-Fernández & Otegi-Olaso (2018), which states that sustainable innovation enables companies to perform better in social and environmental dimensions while improving their financial performance. Innovation is urgently needed in the delivery service industry, whose business faces the digitalization era, especially from e-commerce which demands rapid change.

d. *Factors Affecting Digital Model Business Innovation*

Previous research on the implementation of business innovation model Zhao et al. (2019); Fjeldstad & Snow (2018); Leitão et al. (2019); Jalilvand et al. (2019); Geissdoerfer et al. (2018); Bouwman et al. (2018); Gallego-Bono & Avila (2016), Geldes et al. (2017); Sorescu (2017), Evans et al. (2007), generally use independent variables as factors that influence the implementation of BMI, among others; leadership, mind-set, resource, technology innovation, method & tools, dynamic capability, big data, knowledge management, or entrepreneurship.

From the variables used in the previous research above, it can be concluded that business model innovation generally focuses on the company's internal factors. So the author views that it is necessary to carry out a more in-depth exploration of digital business model innovation at a delivery service company by adding external factors as variables, making it a more complete contribution to understanding digital business model innovation.

Based on the literature, external factors that are explored more deeply come from the customer side, namely the dynamic customer needs factor, which often occurs in the courier service industry. With the convenience of technology, customers' needs for the needs of delivery products and services can change rapidly. This is in line with Jiao et al. (2006), which states that customer requirements management is one of the main factors in product development to be successful in the market. A poor understanding of customer requirements and inaccurate assumptions made during the collection and analysis of requirements information has significant negative implications for product design and manufacture in terms of quality, lead time, and cost.

As for internal factors, based on the literature, the author will explore more deeply the dynamic capabilities of the delivery system and adaptive product management as factors that influence the application of digital BMI. This is in line with the opinion of Goffin & Mitchell (2010) that technological advances, changes in competition, and changes in customer needs are the main drivers of business model innovation.

e. *Role of Digital Maturity as Moderator*

Previous research has also not used many digital maturity levels as a driving factor, which should be expected to increase the relationship between the business innovation of a delivery service company and its performance, especially in the current era of digitalization/industry 4.0. So the author wants to contribute by emphasizing the Digital maturity level as a variable that strengthens the relationship between digital model business innovation and the sustainability of innovation performance. This is based on the environment of the delivery service industry in E-Commerce which is directly influenced by the company's digital ability to carry out business activities, both by the marketplace, seller, buyer, payment service, or fulfillment, which almost all use digital platforms.

In addition, the digital maturity level is also used to measure the direct relationship between the dynamic capability variable of the delivery system and the sustainability of innovation performance and the relationship between dynamic customer needs and the sustainability of innovation performance. The research literature that uses the digital maturity level as a moderator in the relationship between the variables above is still limited, and the authors try to contribute to the role of the digital maturity level as a moderator.

6. CONCLUSION

This study concludes that e-commerce needs to make some innovations in adapting to the needs of today's customers, especially in the era of digitalization. Some of the innovations that can be done consist of product terms, service features, customer satisfaction, involvement in the e-commerce marketplace, and in terms of delivery patterns. In addition, based on the previous discussion, this study finds that the performance of

sustainable innovation is not optimal as found in several phenomena and previous research problems, such as:

- Dynamic capability strategy as implemented by DiDi Taxi
- Adaptive product management strategy like Cisco's
- Dynamic customer requirements management strategy as implemented by Dell through Dell Direct Mode

In addition, with a very large digital-based E-Commerce market share, the digital strategy is considered to be one of the strategies driving the improvement of the innovation performance of delivery service providers in Indonesia, both through the dynamic capabilities of the delivery system, adaptive product management, dynamic customer needs, and digital business model innovation.

Based on the conclusions, this study designs several recommendations based on crucial issues that need to be studied further from the issue of digital business model innovation in Indonesian courier service companies. Therefore, this review expects further research related to several issues, including the following:

1. The Effect of Dynamic Capabilities on Business Innovation of the Company's Digital Model.
2. The Influence of Dynamic Capabilities on the Sustainability of the Company's Innovation Performance.
3. The Effect of Product Adaptive Management on Business Innovation of the Company's Digital Model.
4. The Effect of Product Adaptive Management on the Sustainability of the Company's Digital Innovation Performance.
5. The Influence of Customer Dynamic Needs on the Company's Digital Model Business Innovation.
6. The Influence of Customer's Dynamic Needs on the Sustainability of the Company's Innovation Performance.
7. The Influence of Digital Model Business Innovation on the Sustainability of the Company's Innovation Performance.
8. The influence of the Digital Maturity Level as a moderator strengthens the relationship between the Dynamic Capability of the Delivery System and the Company's Continuous Innovation Performance.
9. The influence of the Digital Maturity Level as a moderator strengthens the relationship between Adaptive Product Management and

the Company's Continuous Innovation Performance.

10. The influence of the Digital Maturity Level as a moderator strengthens the relationship between Customer Dynamic Needs and the Company's Continuous Innovation Performance.
11. The influence of the Digital Maturity Level as a moderator strengthens the relationship between Digital Model Business Innovation and the Company's Continuous Innovation Performance.

REFERENCES

- [1] Adams, Jerome M. 2019. "The Value of Worker Well-Being." *Public Health Reports* 134(6).
- [2] Amit, Raphael and Christoph Zott. 2001. "Value Creation in E-Business." *Strategic Management Journal* 22(6-7):493-520.
- [3] Amit, Raphael and Christoph Zott. 2012. "Creating Value through Business Model Innovation." *MIT Sloan Management Review* 53(3):41-49.
- [4] Baden-Fuller, Charles and Stefan Haefliger. 2013. "Business Models and Technological Innovation." *Long Range Planning* 46(6):419-26.
- [5] Bharadwaj, Anandhi, Omar A. El Sawy, Paul A. Pavlou, and N. Venkatraman. 2013. "Digital Business Strategy: Toward a next Generation of Insights." *MIS Quarterly: Management Information Systems* 37(2).
- [6] Björk, Jennie, Paolo Boccardelli, and Mats Magnusson. 2010. "Ideation Capabilities for Continuous Innovation." *Creativity and Innovation Management* 19(4).
- [7] Boh, Wai Fong, Cheng Jen Huang, and Anne Wu. 2020. "Investor Experience and Innovation Performance: The Mediating Role of External Cooperation." *Strategic Management Journal* 41(1).
- [8] Bouwman, Harry, Shahrokh Nikou, Francisco J. Molina-Castillo, and Mark de Reuver. 2018. "The Impact of Digitalization on Business Models." *Digital Policy, Regulation and Governance* 20(2).
- [9] Calik, E. and F. Bardudeen. 2016. "A Measurement Scale to Evaluate Sustainable Innovation Performance in Manufacturing Organizations." *Procedia CIRP* 40:449-54.

- [10] Chesbrough, H. 2002. "The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spin-off Companies." *Industrial and Corporate Change*.
- [11] Chesbrough, Henry. 2010. "Business Model Innovation: Opportunities and Barriers." *Long Range Planning* 43(2-3):354-63.
- [12] Clauss, Thomas. 2017. "Measuring Business Model Innovation: Conceptualization, Scale Development, and Proof of Performance." *R and D Management* 47(3):385-403.
- [13] Desouza, Kevin C., Yukika Awazu, Sanjeev Jha, Caroline Dombrowski, Sridhar Papagari, Peter Baloh, and Jeffrey Y. Kim. 2008. "Customer-Driven Innovation." *Research-Technology Management* 51(3):35-44.
- [14] Eisenhardt, Kathleen M. and Jeffrey A. Martin. 2000. "Dynamic Capabilities: What Are They?" *Strategic Management Journal* 21(10-11).
- [15] Eksell, Anton and Alexander Härenstam. 2017. "Business Model Innovation for a Digital Future." *Publications.Lib.Chalmers.Se*.
- [16] Fitzgerald, Michael, Nina Kruschwitz, Didier Bonnet, and Michael Welch. 2014. "Embracing Digital Technology: A New Strategic Imperative." *MIT Sloan Management Review* 55(2).
- [17] Fjeldstad, Øystein D. and Charles C. Snow. 2018. "Business Models and Organization Design." *Long Range Planning* 51(1).
- [18] Gallego-Bono, Juan Ramón and Rafael Chaves-Avila. 2016. "Innovation Cooperative Systems and Structural Change: An Evolutionary Analysis of Anecoop and Mondragon Cases." *Journal of Business Research* 69(11).
- [19] Gassmann, Oliver, Karolin Frankenberger, and Michaela Csik. 2014. "Revolutionizing the Business Model St. Gallen Business Model Navigator." *Management of the Fuzzy Front End of Innovation* 18(3).
- [20] Geissdoerfer, Martin, Doroteya Vladimirova, and Steve Evans. 2018. "Sustainable Business Model Innovation: A Review." *Journal of Cleaner Production*.
- [21] Hutter, Frank, Holger H. Hoos, and Kevin Leyton-Brown. 2011. "Sequential Model-Based Optimization for General Algorithm Configuration." in *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. Vol. 6683 LNCS.
- [22] Jalilvand, Mohammad Reza, Leila Nasrolahi Vosta, Rashid Khalilakbar, Javad Khazaei Pool, and Reihaneh Alsadat Tabaeian. 2019. "The Effects of Internal Marketing and Entrepreneurial Orientation on Innovation in Family Businesses." *Journal of the Knowledge Economy* 10(3).
- [23] Johnson, Gerry, Richard Whittington, Kevan Scholes, Duncan Angwin, and Patrick Regner. 2017. *Exploring Corporate Strategy Text and Cases 11th Edition*.
- [24] Kim, Stephen K. and Sungwook Min. 2015. "Business Model Innovation Performance: When Does Adding a New Business Model Benefit an Incumbent?" *Strategic Entrepreneurship Journal*.
- [25] Kiron, David, Nina Kruschwitz, Martin Reeves, and Eugene Goh. 2013. "The Benefits of Sustainability-Driven Innovation." *MIT Sloan Management Review*.
- [26] Leitão, João, Sónia de Brito, and Serena Cubico. 2019. "Eco-Innovation Influencers: Unveiling the Role of Lean Management Principles Adoption." *Sustainability (Switzerland)* 11(8).
- [27] Lin, Liang Yang, Se Hwa Wu, and Binshan Lin. 2008. "An Empirical Study of Dynamic Capabilities Measurement on R&D Department." *International Journal of Innovation and Learning* 5(3):217-40.
- [28] Lin, Ming Chyuan, Chen Cheng Wang, and Tzu Chang Chen. 2006. "A Strategy for Managing Customer-Oriented Product Design." *Concurrent Engineering Research and Applications* 14(3):231-44.
- [29] Lin, P., Y. Huang, and J. Wang. 2010. "Applying the Theory of Consumption Values to Choice Behavior toward Green Products." in *5th IEEE International Conference on Management of Innovation and Technology, ICMIT2010*.
- [30] Lin, Ping, Xiaosan Zhang, Shuming Yan, Qingquan Jiang, and Chenxi Huang. 2020. "Dynamic Capabilities and Business Model Innovation of Platform Enterprise: A Case Study of DiDi Taxi." *Scientific Programming* 2020.
- [31] Malholtra, Naresh K. and Satyabhusan Dash. 2016. *Marketing Research: An Applied Approach Seventh Edition*.
- [32] Mardani, Amirhosein, Saghi Nikoosokhan, Mahmoud Moradi, and Mohammad Doustar. 2018. "The Relationship Between Knowledge Management and Innovation Performance."

- Journal of High Technology Management Research 29(1).
- [33] Matzler, Kurt and Hans H. Hinterhuber. 1998. "How to Make Product Development Projects More Successful by Integrating Kano's Model of Customer Satisfaction into Quality Function Deployment." *Technovation* 18(1).
- [34] Mennens, Kars, Anita Van Gils, Gaby Odekerken-Schröder, and Wilko Letterie. 2018. "Exploring Antecedents of Service Innovation Performance in Manufacturing SMEs." *International Small Business Journal: Researching Entrepreneurship* 36(5).
- [35] Morris, Michael, Minet Schindehutte, and Jeffrey Allen. 2005. "The Entrepreneur's Business Model: Toward a Unified Perspective." *Journal of Business Research* 58(6).
- [36] Sia, Siew Kien, Christina Soh, and Peter Weill. 2016. "How DBS Bank Pursued a Digital Business Strategy." *MIS Quarterly Executive* 15(2).
- [37] Sorescu, Alina. 2017. "Data-Driven Business Model Innovation." *Journal of Product Innovation Management* 34(5).
- [38] Teece, David J. 2007. "Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance." *Strategic Management Journal* 28(13).
- [39] Teece, David J. 2010. "Business Models, Business Strategy and Innovation." *Long Range Planning* 43(2-3).
- [40] Teece, David J. 2014. "A Dynamic Capabilities-Based Entrepreneurial Theory of the Multinational Enterprise." *Journal of International Business Studies* 45(1).
- [41] Teece, David J. 2017. "Dynamic Capabilities and (Digital) Platform Lifecycles." *Advances in Strategic Management* 37:211-25.
- [42] Turban, Ephraim, Ephraim McLean, and James Wetherbe. 2000. "Information Technology for Management: Transforming Organizations in the Digital Economy." *Information Technology* 2(4).
- [43] Wang, Dawei, Bo Hu, Chang Hu, Fangfang Zhu, Xing Liu, Jing Zhang, Binbin Wang, Hui Xiang, Zhenshun Cheng, Yong Xiong, Yan Zhao, Yirong Li, Xinghuan Wang, and Zhiyong Peng. 2020. "Clinical Characteristics of 138 Hospitalized Patients with 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China." *JAMA Journal of the American Medical Association* 323(11).
- [44] Wirtz, Bernd W. 2019. *Digital Business Models: Concepts, Models, and the Alphabet Case Study*. Vol. 25.
- [45] Xu, Xin, James Y. L. Thong, and Kar Yan Tam. 2017. "Winning Back Technology Disadopters: Testing a Technology Readoption Model in the Context of Mobile Internet Services." *Journal of Management Information Systems* 34(1).
- [46] Yoo, Youngjin. 2010. "Computing in Everyday Life: A Call for Research on Experiential Computing." *MIS Quarterly: Management Information Systems* 34(SPEC. ISSUE 2).
- [47] Zhao, Jie, Zelong Wei, and Dong Yang. 2019. "Organizational Search, Dynamic Capability, and Business Model Innovation." *IEEE Transactions on Engineering Management*