

The influence of digital access on business during covid-19
pandemic



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จุฬาลงกรณ์มหาวิทยาลัย
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การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อพิสูจน์อิทธิพลของการเข้าถึงดิจิทัลต่อธุรกิจในช่วงการระบาดใหญ่การเข้าถึงแบบดิจิทัลมีอยู่รอบตัวเราอยู่แล้ว เช่น การสื่อสารทางอีเมล การธนาคารออนไลน์ ฯลฯ ในตอนแรกมีผู้ใช้ที่ขับเคลื่อนโลกของเราโดยใช้การเข้าถึงแบบดิจิทัล ได้แก่ ระบบนิเวศ นวัตกรรมการวิจัยและพัฒนา ความปลอดภัย ประสิทธิภาพทางธุรกิจ และในปี 2020 การระบาดใหญ่ของ โควิด-19 ได้กลายเป็นปัจจัยหนึ่งที่ขับเคลื่อนการเข้าถึงดิจิทัลทั่วโลก งานวิจัยนี้จะศึกษากลยุทธ์ของบริษัทที่มีการพลิกโฉมและปรับตัวสู่ดิจิทัลหลังจากประสบกับการระบาดใหญ่ และจะศึกษากลยุทธ์ทางธุรกิจในปีทั้ง 5 ประการ ผลลัพธ์จะแสดงในงบการเงิน เกณฑ์ที่ใช้ในการพิสูจน์ผลลัพธ์มีอยู่สี่ส่วน คือ งบกำไรขาดทุน: เพื่อศึกษารายได้และกำไรสุทธิ และงบดุล: เพื่อศึกษาผลการดำเนินงานของบริษัทในการสร้างรายได้และกำไรจากการลงทุนอัตราส่วน กระแสเงินสด: ศึกษาความสามารถในการ จัดการกระแสเงินสดจากการดำเนินงาน อัตราส่วนดัชนีการเงินภายนอก : เพื่อแสดงผลการดำเนินงานของบริษัทสร้างเงินสดเป็นเงินสดในการเติบโตของธุรกิจ



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This research purpose is to prove the influence of digital access on business during pandemic. Digital access is already around us such as email communication, online banking, etc. At the beginning they have four factors that drive our world using digital access which is ecosystem, research and development innovation, security, business effectiveness. In 2020 covid-19 pandemics have become one of the factors that drive digital access around the world. This research will see the company strategy that has digital transformation and adaptation after suffering from a pandemic and will study business strategy in all five factors. The result will show in the financial statement. The criteria that are used to prove the result is income statement: to study the revenue and net profit performance, balance sheet: to study the performance of the company to generate revenue and profit on investment, operating cash flow ratio: the study the ability to manage cash of operation, external financing index ratio: to show the performance of company's generate cash to finance in business growth



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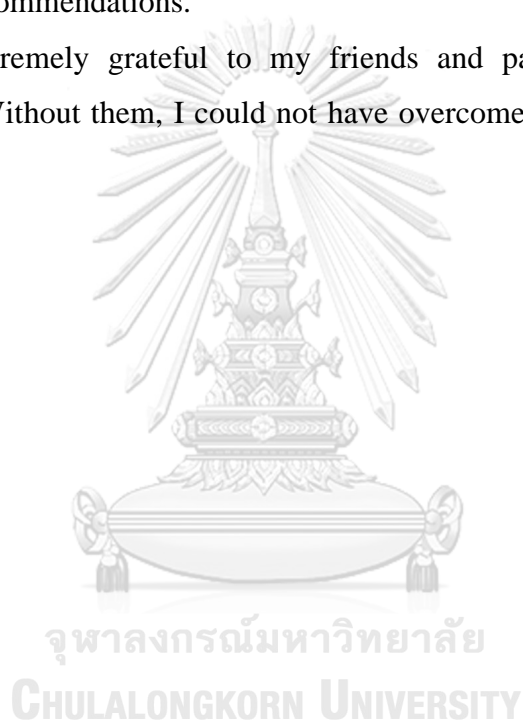


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Introduction

Nowaday the internet is a more important role for everyone around the world in daily life. The electronic devices with a global network of billions of computers are called the internet. We can use the internet to communicate with anyone in the world and access information at any time. We can do all of this by going online, it is connecting a computer to the internet. When someone says connected computer to the internet they also understand this computer going online. Many people may be wondering about the Internet. How does it work? The internet is a physical cable network around the world. The cable TV and fibre optic cable, copper telephone wires or even wireless connection like 4G signal and wifi all require physical cable to access the internet. When you enter the website your computer sends these wire requests to the server. The server is the store's website. And it works like a computer hard drive. When the server gets the request, the server will bring the correct information from the website and send it to your computer screen. The ability to communicate with anyone in the world is one of the best features of the internet. The oldest way of communication and sharing information on the internet is by email which has many people using this communication. People can connect through social media in many different ways and create an online community where information can be exchanged around the world. There are a lot of things that the ethernet can do, such as shopping online and keeping updated with news. You can meet new people, pay any bills, online payment transfer, learn new skills or use in business.

Nowadays we use the internet normally in our daily life. The Internet can improve both the lifestyle and quality of life of many people. We are relying on technology more than ourselves. Our day starts with checking email or text messages. and ends with watching TV, series or movies online. We use the internet for entertainment and new updates. In daily life Everyone hangs out with friends is a fun thing to do. But for today's generation, using streaming online platforms has become the new definition of relaxation and fun. Numerous other platforms have started broadcasting TV series and movies on their channels. You can access these streaming platforms everywhere with the internet. The internet plays an important role in journalism and media today. The internet has provided a platform for various news channels and newspapers to present online. News is now available on online platforms and on our digital devices. The information is updated every minute. And you can check anytime and anywhere you want. For our lifestyle the Internet plays an important role in social development. With the help of the internet Global connections are possible. Friends, family, and business corporations can connect between countries. Everyone can learn about the language, culture, beliefs and diversity of other countries. while sitting comfortably at home focusing on building a global economy Exchange of goods and services, culture or population, eliminating physical boundaries between countries and businesses.

In terms of quality of life the internet can help us a lot in areas such as education for students. Health care, safety and business benefits. For education The internet has many helpful blogs and articles related to a variety of topics. Students and teachers who need research data from any part of the world can access it using the internet. Information is easily accessible from any place such as personal, organization or government. Students can access it at any time and use it for research or assignments. In the same way teachers can reach out to them to prepare lessons for students or provide detailed analysis on any topic. Education is essential for any country or society looking for advancement. The internet has made education accessible all over the world. They also have an online learning platform with a number of reputable educational institutions that make a difference in online courses and educate students without paying tuition. But for some courses that have a certificate may have some tuition fee. The internet has different content that students can use to learn or develop their new skills. These contents are updated daily, and increase learning opportunities. Today, more and more teachers are offering online classes to their students. By using online platforms, they don't have to pay any tuition fee. Everyone can learn new things from these online platforms in the comfort of their homes and with free time. There are many ways in which everyone can learn something new. These study types include animation videos, pictures, games for education, basic crash course videos. Some parents said that online schools are not as useful as you can learn but unable to ask questions but with technological innovation. This makes it easy for students to communicate and ask their questions to teachers immediately when they have a question. Now, students don't have to wait long for the next class to ask teachers questions or concerns. They can also communicate with their classmates on the same platform. It has opened an online platform where both teachers and students can discuss the details and assignments of what they learn.

There are some benefits of business from the internet. The internet has an important role and helps to create new product business that is suitable for companies and small business expansions. People use the internet to digitally market any product or brand. The Internet allows businesses to reach a diverse audience from all over the world. The pop-up advertisement that you see when you play social media, games or while reading any article page. To read these pop-up articles is one of the business techniques for distributing services and products publicly. There are many different online platforms that companies use to reach customers around the world, some people use both digital marketing and traditional methods together to be number one in their industries. These businesses are successful because they have audiences with different satisfies and opinions. They also interact with people from different age groups. Brand image advertising companies can also use online platforms to showcase their values and quality of product to their customers. They can use various online platforms to create a brand image. Customers can use these online platforms to visit their business partner to learn more about their services and products. Communication is essential in doing business. The Internet can help both external communication and internal communication. External communication, the internet allows business people to reach audiences around the world. They can get a lot of benefits and engage with different customers in a number of ways, such as building good relationships and

good customer experiences and services. Understanding and quick response to customers.

These solutions will help businesses learn and adapt following the market and customer satisfaction. Instant surveys also allow them to get direct customer feedback. This helps in improving the quality of productivity for their business. Internal communication, the internet facilitates the communication inside organization and exchange of information to other branches in different regions of companies. Email is a formal and legal official means of communication. It is the best way to communicate with team members and supervisors to drive business growth. These customers can also give their experiences and opinions on the business platform. Feedback will attract other customers and force them to use the same products and services. Using online stores are more popular these days and demand of the day as the epidemic spreads. Many businesses are using the product organization event to spread their business. The online payment method can support customers such as net banking or mobile banking to pay for their purchases instead of worrying about cash. When you have the internet you can work anywhere. Quick access to the Internet makes it possible for marketing, finance, design, and customer care professionals while still working from home. This gives them the opportunity to live where they want and reduce travel time. People can use the internet to share, create knowledge and develop new methods To develop themselves anywhere, anytime using any device. Connecting and empowering people enables us to accelerate economic growth and enhance the well-being of societies around the world.

This research study about the influence of digital access on business during covid-19 pandemic. The previous paragraph has shown that the internet affects lifestyles and quality of life for everyone. The internet allows us to use digital access to communicate and cooperate with each other. We can fully participate in digital society by using digital access. This includes access to tools and technologies by using the internet as a connection. So, this research will put digital access as a subset of the internet. The reason for this study is to prove the ability of digital access on business during covid-19 pandemic. As you know covid-19 has a lot of effect on the economy. After the lockdown policy many companies have to use more digital access in the work process. 2020 is the first year of digital transformation in Thailand for all industries. The first infected person was found in Thailand around late January 2020, this is the first wave of covid-19 in Thailand. Thailand has a lockdown policy from April 2020 till late July 2020 which takes time for 4 month. After the lock down policy was announced, employees for all companies have to work from home because they need social distancing to avoid covid-19. In this period all business industries are stuck with the digital transformation problem which leads to loss of their revenue and net profit. On the other hand in 2021 some companies have success with digital transformation by using it in every working process. This study will analyze whether digital access is helpful for business growth and economic growth during covid-19 pandemic.

The significance of this research is not just to prove the abilities of digital access can drive business and economic growth. It's also to find pros and cons for digital access, not things are perfect if they are something good they also have

something bad. This study will be a guideline for anyone to prepare and avoid for both pros and cons of using digital access in business.

Literature Review

2.1 Data platform-based business models - An exploration of critical success factor

Nowaday people, organizations and resources are connected by a network of digital platforms. Many businesses of all industries that use digital platforms on work processes are increasing. Digital access can contribute to building rapidly and scaling up business in a simpler and cheaper way. That is why we can see many businesses growing faster than usual. In this understanding platform to facilitate consumer access. Digital technology can help us to connect people with a wide range of services and products. The value can be created by an organization with ecosystem resources. Rohn, Bican, Brem, Kraus, Clauss (2021) they aim to study six key success factors which divide into three main keys and 3 outer keys. Three main keys are creation value of product, value of logistic and value of brand image. Three outer keys are the drive of digital transformation, creating a platform which can satisfy customers, success and promotion culture. Digital platform business models are different from traditional model business. The traditional model business creates value of products straight forward like transforming an input to output(product) by passing through manufacturing steps. The creation value of a product needs a wide range of core resources such as financial and physical resources (raw material and manufacturing plant). Therefore the key of the traditional business model is to control the valuable production process in order to create the best quality product for all customers. For digital platform business models they don't have to control processes. The platform can control directly over the content of transactions (product and services). The most important thing of a digital platform business model is the number of participants, the interaction between customers. The effect of network interaction makes business scale up easier than other competition. This research characterized digital platform business models (platform-based business model) in three different ways. (1) creation value of product: include platform technology and network externalities. Platform technology will create matches and facilitate interaction between business-to-business and business-to-customer. Network externalities are focused on the group of customers because the digital market is the place where we can exchange products and services where the number of customer(network size) effect to value of product, (2) value of logistic: as you know the strong point of digital business model is transactions speed and efficiency of communications. The producer can offer products by online channel to customers around the world, (3) value of brand image: key revenue stream such as commission transaction based model, subscription, advertising and service sales. This research uses an interview method, codification concept and analysis concept to study deep insight into the topic. The result showed that the three main keys (creation value of product, value of logistic and value of brand image) and other three outer factors also have the effect of key success (drive of digital transformation, creating a platform which can satisfy customers, success and promotion culture).

2.2 The effect of digitization on business performance: An applied study of KIBS

The value creation of companies can contribute by digitalization. This study aims to analyze between knowledge intensive business service (KIBS) and digitalization about solutions to improve business performance. The Fourth Industrial Revolution is an industry that uses digitalization to make innovation for the best industrial business. Riberto-Navarrete, Botell - Carrubi, Palacios - Marqués, Orero-Blat (2021) all companies with digital transformation are on the same page with this development process. The other meaning of digitalization is to create value for the companies by using technologies as a key factor. By improving machine innovation can be saving cost, product time, and increasing quality of product and making a higher quality product than other competitors to customers. This research uses fsQCA or fuzzy-set qualitative comparative analysis to find the factor that leads business to best performance. KIBS or knowledge intensive business services use digitization process and big information analytics to increase attraction from customers and give satisfaction to all clients. This can strongly increase business performance for all companies. These techniques also increase performance by improving capabilities of learning and adaptability in organization. Three main key factors that have an effect on business performance are updating social networks, the role of social networks and new digital tools, and last one is practicing new digital tools. And they are outer factor such as the manager age of company with digitalization work process, manager gender of company with digitalization work process and last one is company size. The updating of social networks: is to make online communities and interact with customers through social networks. This process makes good market strategies to companies by expanding the brand to customers around the world. The role of social networks and new digital tools: use digital tools such as email, blog or webpage, etc to make a relationship with customers. If they are active on the internet profile and have interest in product and brand from potential customers, these will lead to respect for their position with other competitors. Practicing new digital tools: employee skill is important not only for companies growth but also for human resource management. Performance of companies can increase by training employees. Another benefit of training is to motivate employees and the pride of the companies. In the result, fsQCA is used to determine which combination of factors lead to superior companies. Six conditions that use to determine is company performance measure from financial situation (SIT), gender of manager (GEN), age of manager (AGE), size of company (EMP), number of social network update by companies (SN), corporate purpose by using new technologies and social network (TOO), new digital tools training (TRA). This analyte is divided into two models which are companies with high performance and companies with poor performance. They have 4 high performance companies in this model. The conditions that show in companies more than 75% are AGE,SN,TOO and TRA which show that these four conditions are a key success condition for high performance companies. The company with poor performance does not have a core condition for being low performance. This research only shows the key success factor of companies only in the region of Valencia,Spain. They could have more outer factors in other regions.

2.3 Digital platform for business-to-business markets: A systematic review and future research agenda

Nowaday, business operations have been evolving using digital platforms. Digital platforms have become more popular and common in the business-to-business (B2B) market. Shree, Singh, Paul, Hao, Xu (2021) use Technology-Organization-Environment (TOE) and Diffusion of Innovation (DOI) to identify organization, technological and environment based factors that are the main role in digital transformation in B2B markets. The relationship in the B2B market is important, digital platforms can increase potential of connection between buyer and seller by allowing them to negotiate easier. This makes a new model of business, when you can reach more supplier, customers you can expand business faster. This research is studied by reviewing literature to help researchers and readers in the future overcome some limitations of digital platforms. This will choose articles published between 2011-2020 by focusing on digital platforms in the B2B markets. Use keywords: B2B, business marketing, digital platform to scope down the article. Start with identification of articles and then screening from title and abstract. Next choose the eligibility of the article by reading the full text. Most of the articles are published in 2019-2020 which show that researchers have given more attention to digital platforms in the last couple years. There are 37 articles that pass the criterias, 65% of them use quantitative methods to study digital platforms, 27% of them use qualitative methods and the rest use mixed methods. This study may have some limitations in criteria of how to choose articles, some keywords may not show in title and abstract. In the result, this research can provide a detail of the literature and factors that affect the success of digital transformation and the performance of outcome in the B2B markets.

2.4 Digital business ecosystem: Literature review and a framework for future research

Digital innovation technology has developed new business organizations. They created the value of networks such as digital business ecosystems (DBEs) over a decade ago, but still have some limitations to analyze and synthesize this knowledge. Senyo, Liu, Effah (2019) need to fulfill this research of the gap in the digital business ecosystem knowledge. Start with developing the framework of digital business ecosystem research by analyzing the direction of DBEs. Next is to provide the gap in digital business ecosystem literature. Last one is a recommendation for future research. They set up a criteria for scope down the articles that will be used in this research by reviewing only journal articles. After they analyze the articles that link to the digital business ecosystem they overview the articles and divide it into four different types which are issues of business name, technical issues, digital business ecosystem artifact and digital business ecosystem conceptualization. Then study the methodologies and theories of articles. In the methodology part most of the study used qualitative and quantitative methods, in the future they may consider using survey and interview methods. Most of the study should use multiple case studies, due to single study may have some limitation of information. If they use multiple case studies they will have more information and analyze better results. In conclusion, this literature can provide the gap limitation of the digital business ecosystem studied and recommendation of DBEs direction to future researchers be considered.

2.5 The role of marketing in digital business platform

In this decade, we can see many companies that are working on digital business platforms (DBPs) have enormous growth. The technologies help people reach each other around the world easier. This literature studied the impact of marketing in digital business platforms. Rangaswamy, Moch, Felten, Bruggen, Wieringa, Wirtz (2020) they show how technologies from digital business platforms affect business growth and identify challenges in using these technologies. They clarify the characteristics of digital business platforms in a different way which is to create value to all parties by matching the needs of both buyer and seller easier. Create a community with network effect, people can reach each other wider and faster. With a good quality of connection the matching between supplier and producer can be made directly on the platform. It can also make a business operation with a high level through the internet such that customers can search the information of the product and find the satisfied one, and make advertisements on online channels to reach more customers. They also determine the potential of marketing digital business platforms, it can reduce transaction and production cost for the companies. Digital business platforms still have their own cost, nothing gets it for free. But why should they choose this platform? Even though they also have the cost of individual operation and daily operation of this platform, the benefits that can be gained from this platform are worth it. It reaches more people and makes online communities around the world which can engage more in deep ways. Digital has been around us for decades but we still feel new about it, and lack the knowledge to bring the full potential of digital business platforms. This literature studies a transaction cost framework about how they reduce transaction cost and other extent factors, production cost. After producer can reduce unnecessary cost and can connect with customers deeper which make customers gain more good service with new experience. In conclusion, digital business platforms have the ability to drive business growth easier and faster.

Conceptual framework

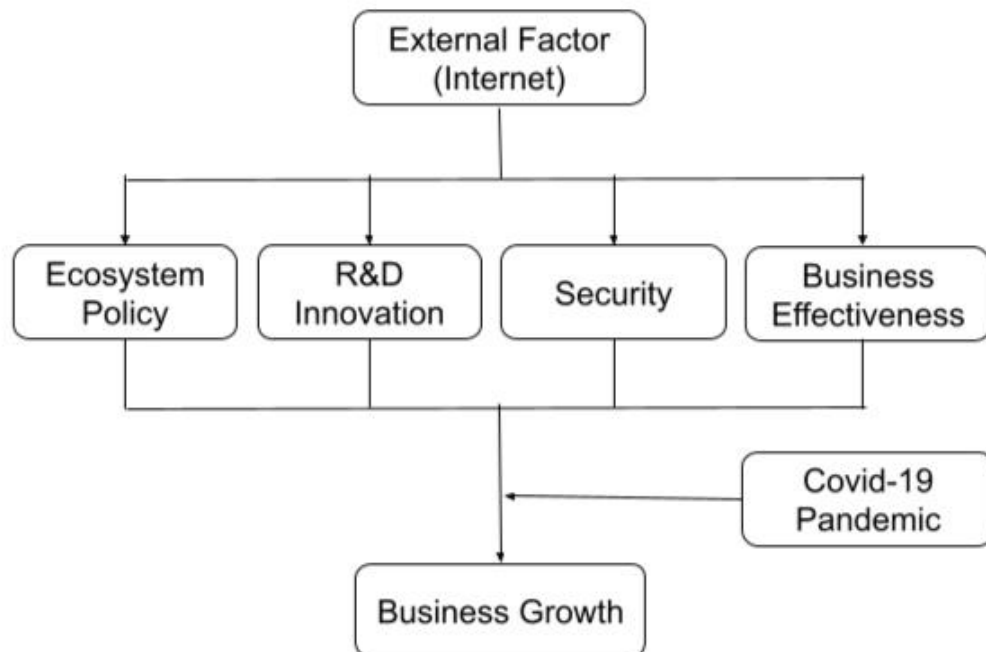


Fig 1: Factors drive digital access

This study conceptual framework will set the internet as an external factor because it is a first point that makes people use digital access by using the internet as a connection. After we have the internet, there are 5 factors that drive people to use more digital access in daily life : ecosystem policy, r&d innovation, security and safety, business effectiveness and covid-19 pandemic.

3.1 Ecosystem policy

The good and service form ecosystem can support human life and activities, also essential to keep our well-being, social development and future economic. The food, plants, air pollution and water are a good benefit that the ecosystem can provide for us. Ecological policies have been observed for many years for helping our global environmental crisis. The digital ecosystem focuses on digitalization of existing products with the help of business partners. While keeping management complexity low. The digital ecosystem can add new features and functions to the system and generate revenue from digital services. Digital ecosystems are best for businesses of good performance companies with strong product capabilities. Limited digital capabilities and keep focus on internal. It works great for companies looking to build smart, connected products. The platform ecosystem is more complex than the digital ecosystem because they focus on connecting between users and smart devices on the platforms. At the same time it guarantees a high performance of service and limited barriers. Recently, many firms' business strategies have incorporated digital transformation. Even though the firms are in the digital transformation process, it is necessary to build a digital ecosystem to improve facilitation and efficiency interaction outside the firms. The supply chain has changed by the digital ecosystem as well. Previously, supply chains operated in separate markets are coming together in the digital ecosystem to help the development of services and new products to create a

supplier ecosystem. There are some benefits for the digital ecosystem. First is faster development of the technologies. Companies use new technologies that are too hard and complex, enabling them to take all advantage of the new product technologies. Creating and developing new sources of income integrating ecosystems creates new revenue streams and enables organizations to track and analyze the broad spectrum of data flowing through their businesses. They can increase the value of a new product by using this information. Business growth can start with reducing unnecessary costs. Building a digital ecosystem with digital transformation can improve working relationship with customers or partners and workflow efficiency

3.2 R&D innovation

Innovation is essential in this era of the emerging digital age, where people's lifestyles change rapidly. I believe that innovation is an important tool that will enable us to keep pace with current megatrends. As such, many companies have developed and implemented an Innovation Management Framework. The business that uses digital on work processes can improve the performance of the companies. It gives opportunities to companies to stay ahead of their competition in their business industries by launching products with new technologies and supporting customer satisfaction. When a product becomes more complex, the R & D department gets more pressure to put a product into the market. But these aren't the only challenges that R&D departments are facing, the other is integration of work. This makes it difficult to access the optimal development process. Simulation technology provides the solution many companies are searching for. As R&D undergoes its own digital transformation, it makes sense to tap into Simulation as a Service. Digitization of the lab doesn't end the traditional methods.

3.3 Security

Digital security is a collective term that describes resources used to protect identity, data, and other assets. In other words we can protect personal information and online identity by using digital security. Difference between cyber security and digital security, digital security is used to protect our online data such as personal data, assets and identity. Cyber security is used to protect more than that. It covers more areas like the whole network computer system and other digital components and information stored internally from unauthorized access. You can see an example for calling digital security a subcategory of cybersecurity. Many good performance firms use two terms interchangeably, in a simple way digital security can protect all data and cyber security can protect in large scale such as networks, systems including data. Criminals in cyber are attracted by the value of information that is worth their exploitation. If they are someone who got a random attack from cybercriminals, for example, they know your credit card password with large balances. Just as they said in the beginning. Our dependence on the internet is increasing. We still have to prepare to protect ourselves and avoid getting lost if something goes sideways. The bet will increase. We want the security of digital data that is flawless and reliable.

3.4 Business effective

Digital technologies and digital transformation have reshaped the industries business, many firms put a lot of effort to gain more benefit of these trends or to be on top of their industries. Previously we already used digital in the communication part, but they can help more than communication. They can use technology to support organizations by decreasing cost, increasing value, making fast decisions and better customer service. For decreasing cost we can see it easily in manufacturing business such as automotive manufacturing, they can use machines instead of human force. Machines can work twenty-four hours a day, seven day a week if it is necessary without overtime payment. This process can decrease cost and increase product value at the same time. For the expansion business part, they can spread about products and services on online platforms which can link to everyone in this world. This step could be more useful than the traditional method.

3.5 Covid-19 pandemic

In late 2019, covid-19 pandemic occurred, everything in the world turned to online, we already use digital as common but this pandemic is a key point to drive more digital transformation. Studying from home through online channels has become more popular for all students. After the covid-19 pandemic, everyone has to keep social distance to avoid infection, so many firms have announced work from home policies and try to adapt digital transformation business models to maintain revenue flow and business operation. People using the internet in daily life increased more than 50% during the pandemic. The potential of digital transformation has shown through these activities, the pandemic has reinforced the gap which remains. While some digital devices have become more popular in recent years, others that do not follow the trend were left behind during the pandemic. This pandemic causes digital transformation. Moreover the next concern of digital transformation is security and privacy. Connections are continually improving over time. The connectivity with this high level has enabled a lot of households and businesses to transition online. After the government announced a national lockdown policy to curb the early covid-19 pandemic, with digitally enabled socio-economic activities, covid-19 has more roles on access and social participation. Digital underscores the fact that connecting and using digital technology is a dynamic goal. Some online activities may not agree as covid-19 treatments begin to emerge and more face-to-face interactions are enabled. But digitalization is still high in areas where the epidemic has acted as a catalyst. All work processes turn to digital like electronic payment, e-commerce and e-health. This will be the key to the pressure of improving high quality connections and also emphasized to every firm to use digital solutions as fundamental.

Covid-19 pandemic has made everyone approach digital transformation. The role of digital transformation and digital innovation become fundamental for the market and new business models. The potential from digital transformation and digital innovation help scientists, researchers and doctors to create a new vaccine and make all countries recover from covid-19. The countries are also concerned about the danger from these technologies that can increase risk for personal security and data protection. This added momentum to their effort in strategic direction, even at the international level. This strategic direction is the best way for supporting, but may not

be enough to ensure a resilient and more inclusive digital future. The framework of digital integrated policy has been divided into six types: market openness, society, use, access, job and innovation. This framework will show the factor that the government should be concerned about making digital as common in the future to improve life quality and economic growth. For market openness: the covid-19 have a lot of effect on start-ups and SMEs business. The market consolidation has been a concern. On the other hand, the large with good performance can gain more influence about digital live in this period. Government should be concerned more about supporting small business access to the online world. Society: during pandemic people spend more time on online platforms whether for study, work or social network communication. This can be the opportunities for everyone to get more world wide interaction. Use: many firms go to digital transformation due to covid-19 pandemic. Government should work to ensure the user will use digital in a good way for both communities and individuals. Access: with social distancing and lockdown policies make many schools and businesses go online. Online communication is an important and common thing during a pandemic. There are some people who live in urban areas and digital access is hard to connect. The government should solve this problem to support business in urban areas. Jobs: digital access opens opportunities to people in many ways. For someone who lives far away and wants to get a job in the city, they can interview through an online channel with no need to pay for transportation. Future work trends could be from this digital transformation and will focus on work from home at least until this pandemic is gone. Innovation: digital transformation can drive new innovation for many businesses, it is a core reason for using digitalization. Innovation will give opportunities for new businesses and markets to show the efficient product and performance of the companies.

Table 1: Independent Variable and Dependent Variable

Independent Variable (X)	Dependent Variable (Y)
X ₁ : Ecosystem policy	Y: Business growth by using digital access
X ₂ : R&D Innovation	
X ₃ : Security	
X ₄ : Business effective	
X ₅ : Covid-19 pandemic	

3.6 Sample group

Sample groups from this study will choose one company from each industry that is doing business type same as independent variable and analyze them by financial statement to the effect of digital access to their firm.

4 Data

4.1 Financial statement

Use financial statements from each sample company to compare the result of companies performance between 2019-2021. The reason for choosing these three years is because 2019 is the year before covid-19 pandemic in Thailand, 2020 is a year that covid-19 already pandemic in Thailand and every company was driven by a pandemic to use more digital access in the work process. Many companies struggle with digital transformation in 2020. The last year is 2021 which is the year that many companies have passed through digital transformation and some companies get more success even better than 2019.

4.2 Opportunity day event from the stock exchange of Thailand

To find business growth strategies that link to digital access and will focus on 3 types of strategies. Intensive growth strategy: is the strategy that focuses on increasing market share of the product. This strategy can do in many ways such as launch a product following the global trend, invest in research and development to launch a new product that is better than other competitors and keep attracting customers in every generation. Integrative growth strategy: is a strategy that will take over the company to expand new customers or new business such as if company A is doing downstream business when they take over upstream and midstream business, they can control the cost and revenue from raw material until end user. They can use raw material from upstream business to sell to other midstream business competitors and use midstream business sell to other downstream business competitors. This way they can get all of the revenue and expand new customers from all upstream, midstream and downstream business. Last one is diversification growth strategy: is a strategy that invests in new business or different industries. This strategy suitable for the companies which need to expand in new business, may be seen as an opportunity to succeed in new business more than old business. Some business industries suffer from market shrink every year, they have to find new business and products and keep following global trends to get more opportunities for success. This part of study presents secondary sources of all five categories that make people think they need more digital access for good.

5. Methodology

This research will divide methodology into five steps to study the result of using digital access on business during covid-19 pandemic.

Step 1: Choose sample companies in Thailand stock market because we need to use financial statements to compare the firm performance before and after covid-19 pandemic. Financial statements can be found from “The Stock Exchange of Thailand” website, they have announced every year on their website.

Step 2: Make a list of the companies following categories of independent variables.

Step 3: After we got a list of companies that we need to study about firm performance with digital business during covid-19 pandemic. We can find the company's business and market strategy from “The opportunity day” event. Find a list of companies from opportunity day events on SET website. The “opportunity day” event in The Stock Exchange of Thailand has a purpose to give information of the listed companies to all investors to know the situation of the companies that they are interested in. The listed companies will report about companies performance, their market strategies and financial statements for each quarter. So, this event will show us which companies gain more benefit after turning business to digital platform during covid-19 pandemic.

Step 4: After we choose 1 company following in each independent category, then compare the financial statement between the third year from 2019 to 2021. The reason for choosing this three year is because 2019 is the year before covid-19 pandemic in Thailand, 2020 is a year that covid-19 already pandemic in Thailand and every company was driven by a covid-19 pandemic to use more digital access in the work process. The last year is 2021 which is the year that many companies have passed through digital transformation and some companies get more success even better than 2019.

Step 5: In this step will use three criteria to analyze the companies from financial statement

First is income statement, to study business growth of company's during pandemic with previous year financial statements. This criteria will use horizontal analysis to compare the company's performance between three years (2019-2021).

Second is the balance sheet, to study operation efficiency of the company which focuses on current ratio, ROA and ROE. The current ratio will measure the company's performance to pay debt in the short term within one year. During digital transformation some companies may struggle with this problem. The current ratio can confirm all investors to see the digital transformation effect to cash flow of paying debt. ROA is the ratio that proves the company's ability to generate revenue on its assets. The higher the ROA the higher performance of a company working on its assets and generating the return. ROE is the ratio that proves the financial performance by considering how a company can generate a profit. This ratio can convince investors to see the growth rate ability of the company.

Last one is cash flow: to understand the company's inflow and outflow of cash. This part is to study the efficiency of using cash in operating a business in one

year and will focus on two parts which are cash from operation ratio: to measure a cash flow that the company can generate in business operation or do they need external financial for expand business, external financing index ratio: to show a financing cash flow that can generate cash to finance in business growth of the company.

Calculation formula calculate operating cash flow ratio

$$\text{Operating cash flow ratio} = \text{Operating cash flow 1 year} / \text{Current liabilities}$$

Calculation formula calculate external financing index ratio

$$\text{External financing index ratio} = \text{Cash from financing} / \text{Cash from operation}$$

Step 6: Compare the financial data of all samples and see what is going on after they pass through the digital transformation process.

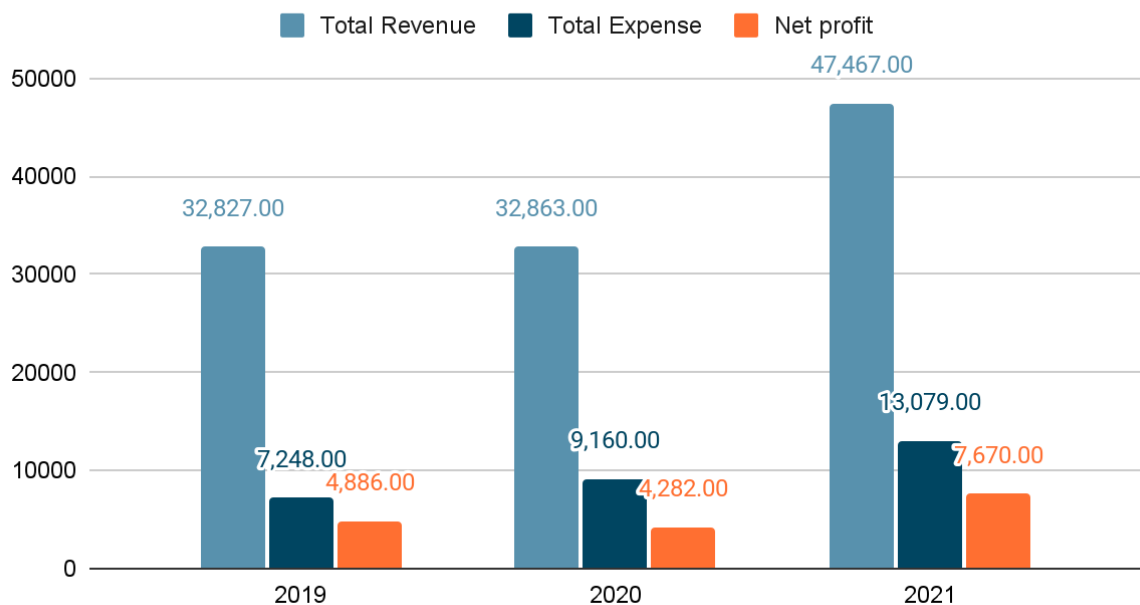


6. Result

6.1 Ecosystem: Gulf Energy Development Public Company Limited. (GULF)

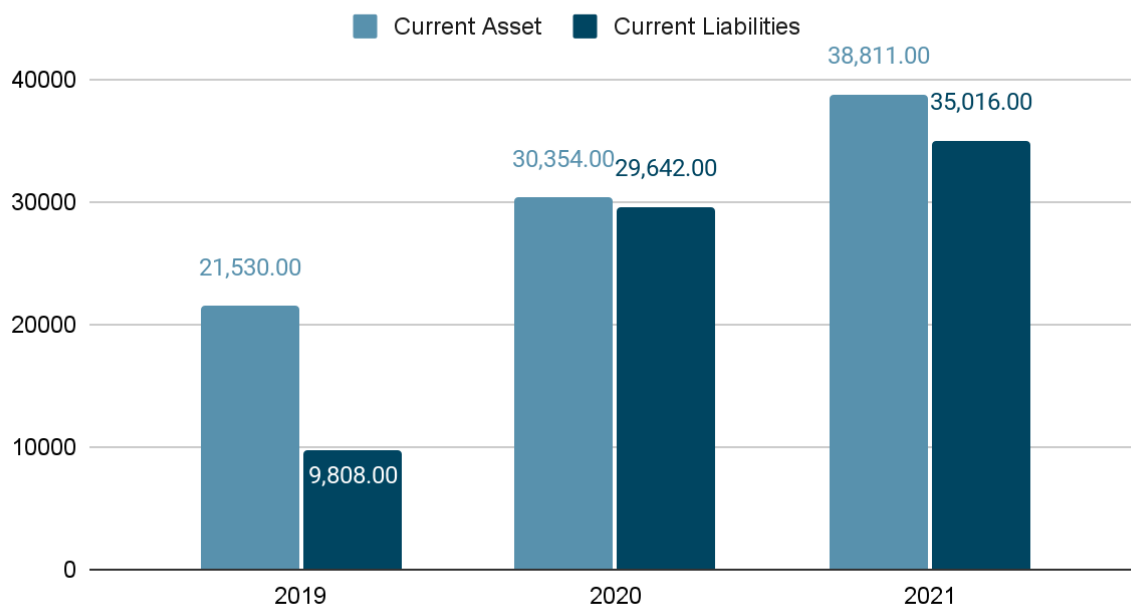
The Gulf Energy Development Public Company Limited is an energy company, core business of this company are energy (Gas-fired power generation, gas and renewable energy), infrastructure (industrial port, deep sea container port and motorway), digital (INTUCH, data center and digital asset exchange). The global energy trend has changed in this century. The common goal of companies in this industry is to reduce greenhouse gas emission and achieve net zero carbon within 2050. People turn to using clean energy instead of fossil energy. The company has changed its strategy to focusing on renewable energy. By 2030, the production of gas-fired energy will fix only 70% of total energy production and increase the capacity of renewable energy production to 30% of total energy production to follow up global energy trends. The investment plan in the next four year will stop investing in gas-fired power generation and use 75% of the total budget in renewable energy projects. They use the technologies for digital access to design the renewable project which can generate energy capacity that is worth the investment budget.

Income Statement



Graph 1: Income statement of Gulf Energy Development Public Company Limited between 2019-2021 (Unit:Million baht)

Balance Sheet



Graph 2: Balance Sheet of Gulf Energy Development Public Company Limited between 2019-2021 (Unit: Million baht)

According to the global energy trend, people are more interested in clean energy. After the Gulf expands the capacity of renewable projects which can get more revenue from renewable energy business. Other than renewable projects is investment in digital business with three projects. First is buying a share of Intuch company which is working in the telecommunication industry. Telecommunication is the most important for doing business. Fast communication makes the companies can take action faster and work faster. Gulf will get a dividend from Intuch around 10% of the total revenue. For data center, GULF joint venture with other two companies which are a top in data center business. Last one is to invest in digital to cooperate with the global to provide a solution about digital asset exchange in Thailand. The business plan of gain can get the attraction from many investors.

In the income statement the net profit from 2019-2021 still increases from following the global energy trend strategy. After expanding the capacity of energy, business can increase in both revenue and net profit. In the balance sheet, the current ratio in 2019 is 2.02 but in 2021 is 1.11. The current ratio decreases according to current liabilities increase from long term loans from investment in Intuch.

Operating cash flow ratio

$$\text{Operating cash flow ratio}_{2019} = 8,048,436,867 / 9,808,947,212 = 0.82 \text{ or } 82\%$$

$$\text{Operating cash flow ratio}_{2020} = 10,578,778,000 / 29,642,630,252 = 0.36 \text{ or } 36\%$$

$$\text{Operating cash flow ratio}_{2021} = 14,014,714,812 / 35,016,233,017 = 0.40 \text{ or } 40\%$$

External financing index ratio

External financing index ratio₂₀₁₉ = $2,220,540,634 / 8,048,436,867 = 0.27$ or 27%

External financing index ratio₂₀₂₀ = $63,100,586,281 / 10,578,778,000 = 5.96$ or 596%

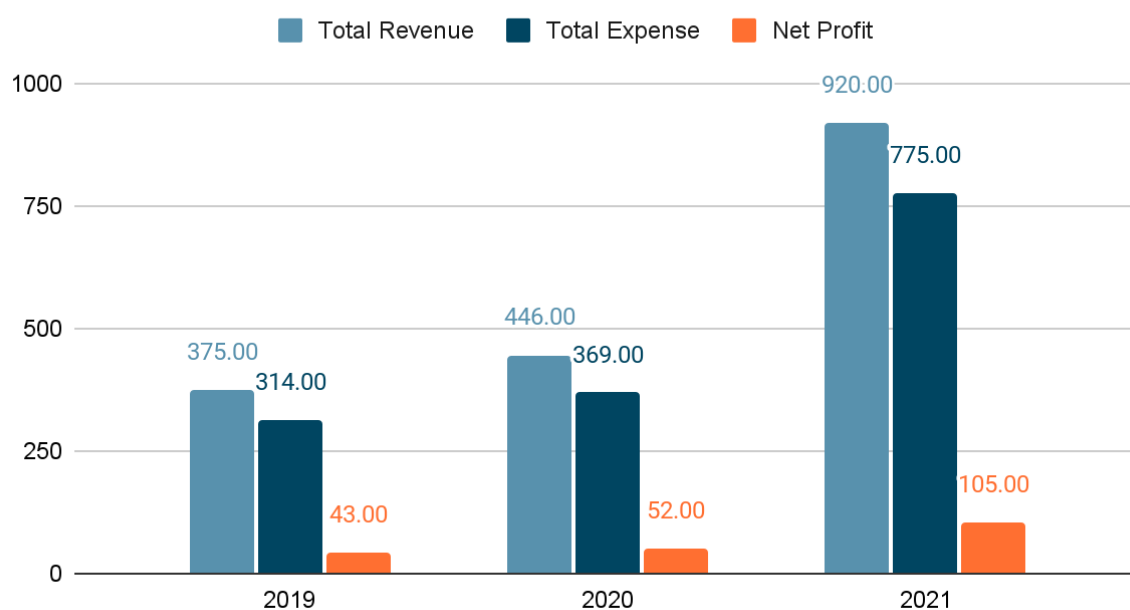
External financing index ratio₂₀₂₁ = $68,128,136,932 / 14,014,714,812 = 4.86$ or 486%

Operating cash flow ratio has decreased due to long term loan from financial service for investing in Intuch company. External financing index ratio is very high which means the company is dependent on financing more than operation, it is not a good result for this ratio.

6.2 Research and innovation: Inter Pharma Public Company Limited. (IP)

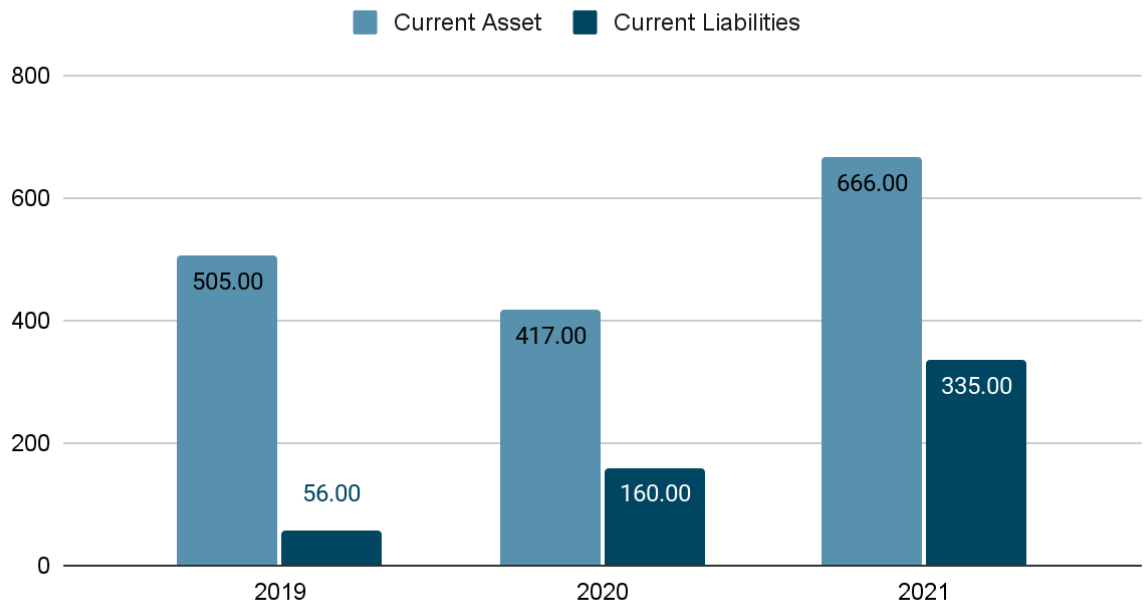
The Inter Pharma Public Company Limited's core business is pharmaceutical innovation, wellness & anti-aging, companion animal, livestock and aesthetic. Digital access technologies are used to support the company's business strategy in the research & development part and selling channel. They focus on the research and development to create new pharmaceuticals with higher quality to ahead other competitors and gain more market share in pharmaceutical business. Also make research with natural source products such as extract kratom. The reason for choosing kratom is to be the first factory in the south of Thailand, develop the extraction skill of kratom and to increase the value of natural resources. Next strategy is to export products to overseas markets to get new customers in other countries, start with the south east asia market and go on. Joint ventures with other companies to use the strength of two companies create a good quality manufacture to launch new products.

Income Statement



Graph 3: Income statement of Inter Pharma Public Company Limited between 2019-2021 (Unit: Million baht)

Balance Sheet



Graph 4: Balance sheet of Inter Pharma Public Company Limited between 2019-2021 (Unit: Million baht)

The pharmaceutical industry is important for everyone in daily life, then if the company has innovation to create high quality products it can make the company ahead of other competitors and get more attraction from all customers which can increase both in revenue and profit. The current liabilities may increase from investing in an extraction kratom project in south of Thailand which may not show any result of profit for now. In my opinion research & development can increase the value of a product but they can not say that it has a strong effect on revenue and profit because it still has other factors such as employee performance, market strategies, cost of selling and economics etc.

In the income statement the net profit from 2019-2021 still increases for three consecutive years. This can show the performance of the company's strategy by expanding customers both domestically and overseas. ROA_{2020} is 12.28 and ROE_{2020} is 11.60. Both ROA and ROE in 2021 are increased to ROA_{2021} is 14.03, ROE_{2021} is 17.07. Even though assets and liabilities are increasing, this company still can generate more profit as you can see in ROA and ROE.

Operating cash flow ratio

$$\text{Operating cash flow ratio}_{2019} = 5,034,330 / 56,229,142 = 0.09 \text{ or } 9\%$$

$$\text{Operating cash flow ratio}_{2020} = -8,817,086 / 160,345,549 = -0.05 \text{ or } -5\%$$

$$\text{Operating cash flow ratio}_{2021} = -41,574,516 / 335,634,795 = -0.12 \text{ or } -12\%$$

External financing index ratio

$$\text{External financing index ratio}_{2019} = 307,208,291 / 5,034,330 = 61.02 \text{ or } 610\%$$

External financing index ratio₂₀₂₀ = $68,228,615 / -8,817,086 = -7.73$ or -713%

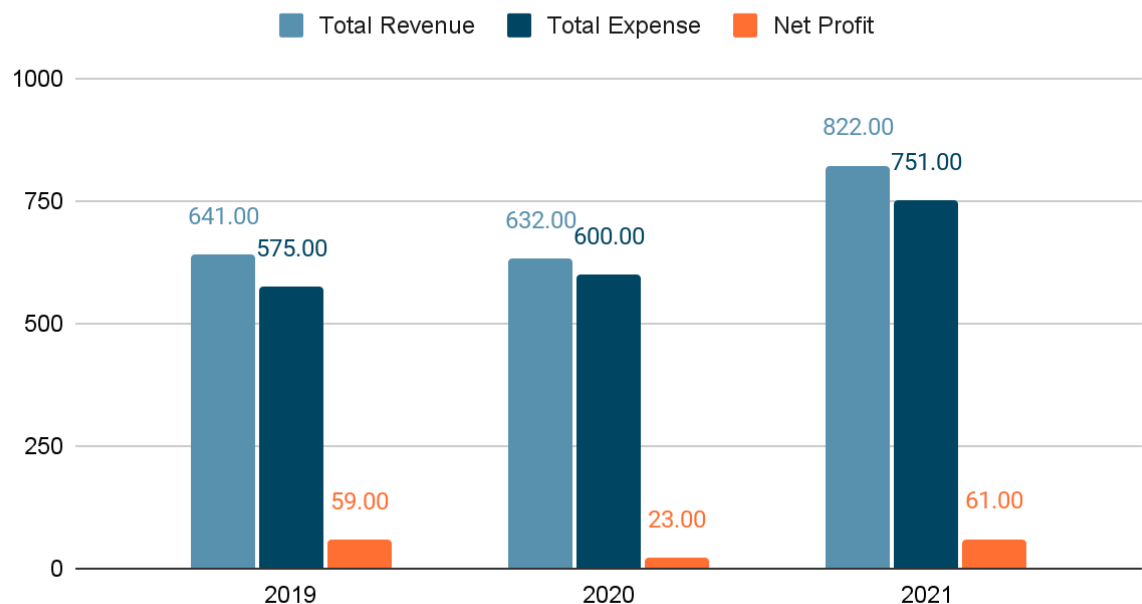
External financing index ratio₂₀₂₁ = $414,915,946 / -41,574,516 = -10.62$ or -1,062%

Operating cash flow is not a good result. External financing index ratio is negative which means the company can focus on operating more than financing which is a good result. This shows the company has performance in generating cash to finance in business growth.

6.3 Security: Nforce Secure Public Company Limited. (SECURE)

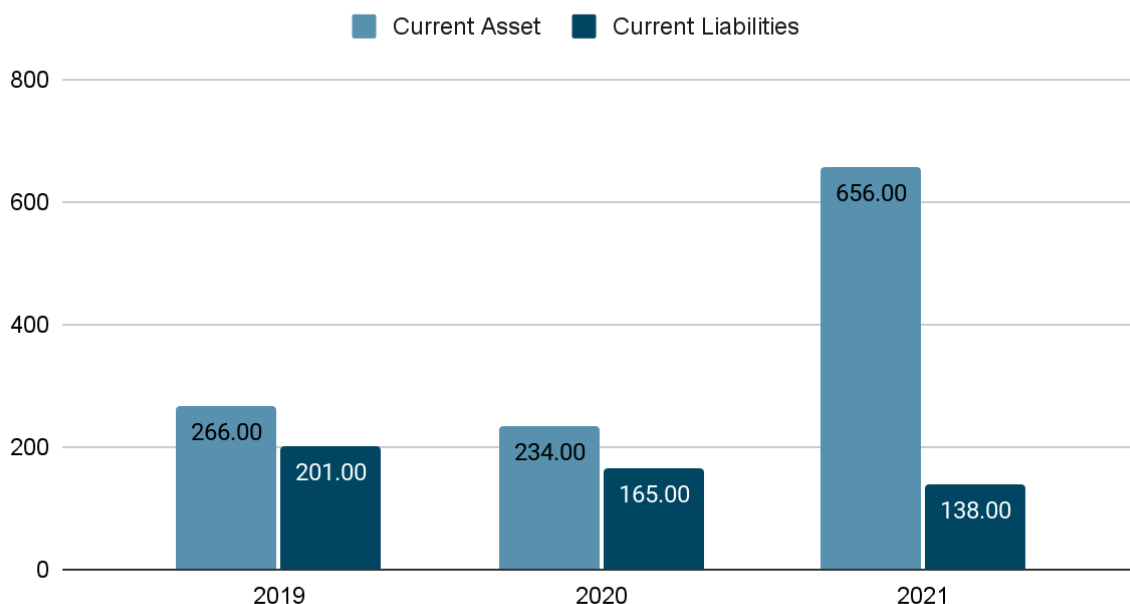
The Nforce Secure Public Company Limited is working as a distributor of cybersecurity solutions. By corporate with many developing cybersecurity vendors, then aggregate solutions from multiple vendors and distribute to different markets. Nowadays cybersecurity has become more popular and a higher priority for all businesses due to today we all work through the internet and electronic devices. So, the safety of the company's data or personal data is what we need. The company's business strategy is to develop more cybersecurity solutions to satisfy customers in all markets and expand customers overseas. Joint ventures with datawov to use technologies from both companies create a new cybersecurity platform solution.

Income Statement



Graph 5: Income statement of Nforce Secure Public Company Limited between 2019-2021 (Unit: Million baht)

Balance Sheet



Graph 6: Balance sheet of Nforce Secure Public Company Limited between 2019-2021 (Unit: Million baht)

According to the global cybersecurity trend, it will get more priority and after 2020 many business industries have passed through digital transformation which can be one of the factors that affect the revenue of the company because when we use more digital in the working process the significant thing to be cautious is safety of the company's data. Then many customer companies need a satisfying cybersecurity for their business which makes demand for cybersecurity increase.

As you can see in the income statement, the total revenue in 2021 will increase from 2020 by around 180% which shows demand for cybersecurity is increasing. Net profit was also positive for three consecutive years.

Operating cash flow ratio

$$\text{Operating cash flow ratio}_{2019} = -10,329,010 / 201,333,243 = -0.05 \text{ or } -5\%$$

$$\text{Operating cash flow ratio}_{2020} = 81,776,706 / 165,354,971 = 0.49 \text{ or } 49\%$$

$$\text{Operating cash flow ratio}_{2021} = 37,877,555 / 138,667,908 = 0.27 \text{ or } 27\%$$

External financing index ratio

$$\text{External financing index ratio}_{2019} = -24,547,859 / -10,329,010 = 2.37 \text{ or } 237\%$$

$$\text{External financing index ratio}_{2020} = -63,214,309 / 81,776,706 = -0.77 \text{ or } -77\%$$

$$\text{External financing index ratio}_{2021} = 369,455,052 / 37,877,555 = 9.75 \text{ or } 975\%$$

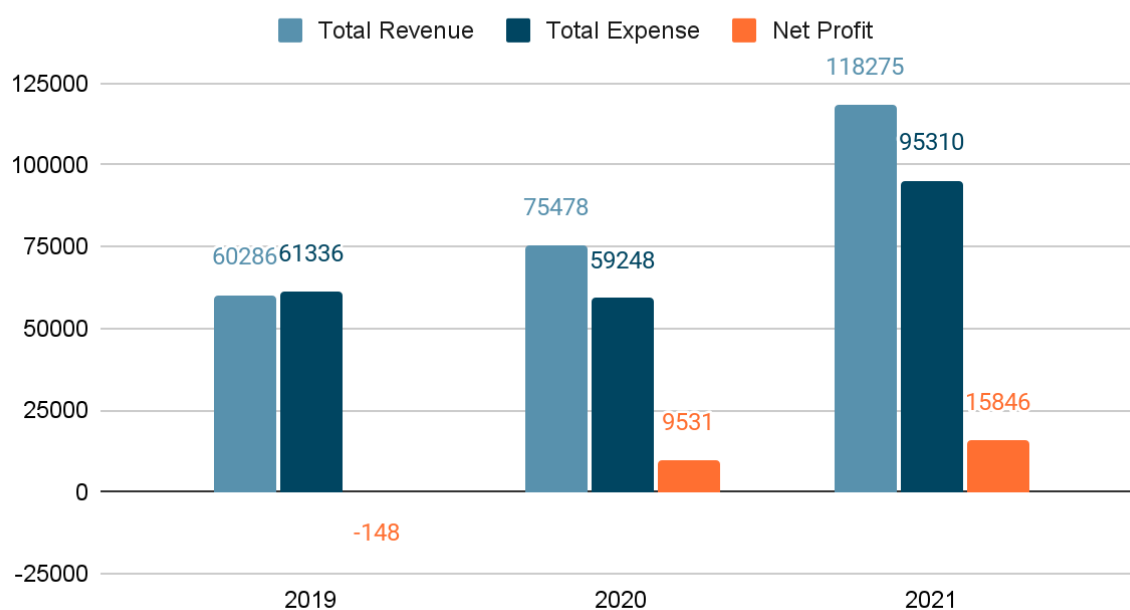
Operating cash flow is an acceptable result, it decreases in 2021 but still positive. The company still can manage operating cash flow. External financing index ratio is negative in 2020 but becomes positive in 2021 which means the company is

dependent on financing more than operation, a number that increases too much is not a good result for this ratio.

6.4 Sri Trang Agro-Industry Public Company Limited. (STA)

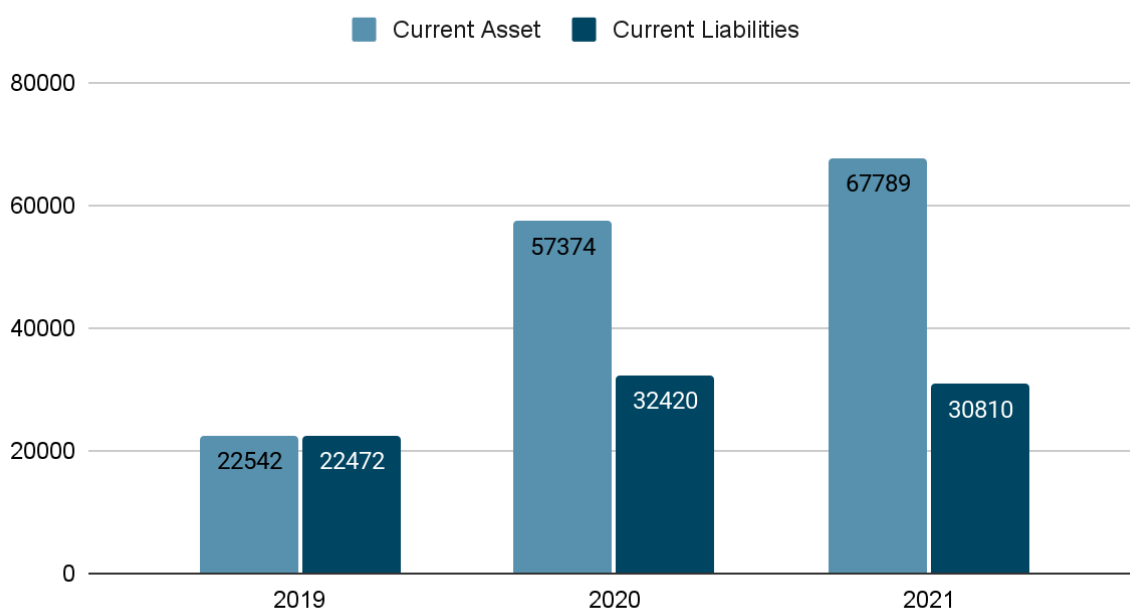
The Sri-Trang Agro-Industry Public Company Limited is doing business in rubber which covers all upstream, midstream and downstream. Upstream is rubber plantation. Midstream is rubber processing which sells to many global level rubber companies as raw material. Downstream is launching their own product as rubber gloves. They divide business strategies for each business. First upstream: they have invested to increase the capacity of rubber plantation. Second midstream: use a technologies from digital access to improve performance of factory such as implement automation & censoring system, reduce energy consumption and change selling channel from retail center to launch mobile application for selling product through application channel to reach more customer and decrease necessary cost of retail center. Last one is downstream: increase sales volume by expanding overseas which can get the revenue from the United States 25%, China 36%, Asia (excluding Thailand and China) 25% and Europe 11% of the total revenue. The revenue structure comes from downstream business (rubber glove) 41% and the rest are from midstream (rubber processing). Last strategy is location for key suppliers and tax privilege. This strategy did not relate to digital access but it can decrease the company's cost of paying tax. They invested in three southern provinces in Thailand which are Trang: 3 projects with tax exemption 5 years for each project. Hat Yai: 2 projects with tax exemption 8 years for each project. Surat Thani: 2 projects with tax exemption 5 years for each project.

Income Statement



Graph 7: Income statement of Sri Trang Agro-Industry Public Company Limited between 2019-2021 (Unit: Million baht)

Balance Sheet



Graph 8: Balance sheet of Sri Trang Agro-Industry Public Company Limited between 2019-2021 (Unit: Million baht)

As they talked about increasing the market share overseas, we can say roughly they got a good result in total revenue. But in this case they are not have enough strong evidence to confirm that using digital access helping in business are 100% effect to company's growth because it still have some outer factor such as demand of rubber glove are increasing due to covid-19 pandemic. During pandemic rubber gloves are used in medicine and demand for them increases a lot, we have to see if the pandemic becomes soft and demand still increases or decreases.

In the income statement the total revenue and net profit have increased for three consecutive years. This may be caused by the performance of selling channels and expansion to other rubber markets. Even though the total revenue is increase but profit margin is still the same as 10% of the total revenue. $ROA_{2019} = 1.44$, $ROA_{2020} = 23.45$, $ROA_{2021} = 28.46$. $ROE_{2019} = -0.61$, $ROE_{2020} = 30.65$, $ROE_{2021} = 37.41$. The results from ROA and ROE show that the company still has a good performance in generating a profit from their assets and liabilities.

Operating cash flow ratio

Operating cash flow ratio₂₀₁₉ = $1,575,966,687 / 22,272,398,500 = 0.07$ or 7%

Operating cash flow ratio₂₀₂₀ = $10,955,238,978 / 32,420,368,261 = 0.34$ or 34%

Operating cash flow ratio₂₀₂₁ = $14,596,600,396 / 30,810,147,365 = 0.47$ or 47%

External financing index ratio

External financing index ratio₂₀₁₉ = $783,964,735 / 1,575,966,687 = 0.49$ or 49%

External financing index ratio₂₀₂₀ = $15,459,346,548 / 10,955,238,978 = 1.41$ or 141%

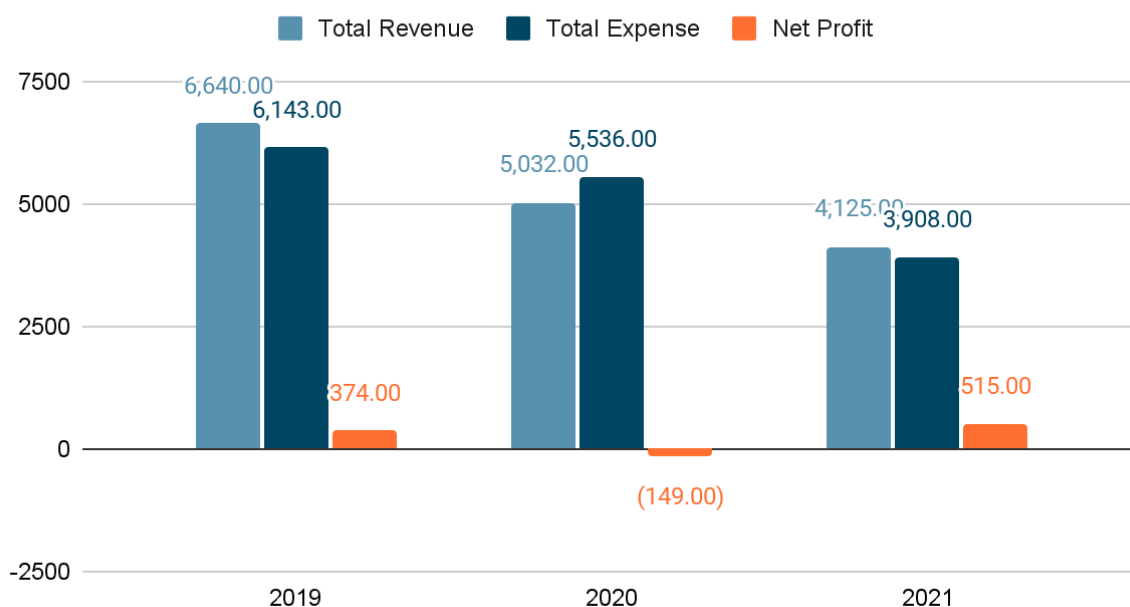
External financing index ratio₂₀₂₁ = $-6,987,976,949 / 14,596,600,396 = -0.47$ or -0.47

The operating cash flow ratio is good, the number is not high but it has improved for three consecutive years. External financing index ratio in 2021 has an improvement from 2020, the result is negative in 2021 which means the company can generate cash to finance business growth.

6.5 Covid-19: GMM Grammy Public Company Limited (GRAMMY)

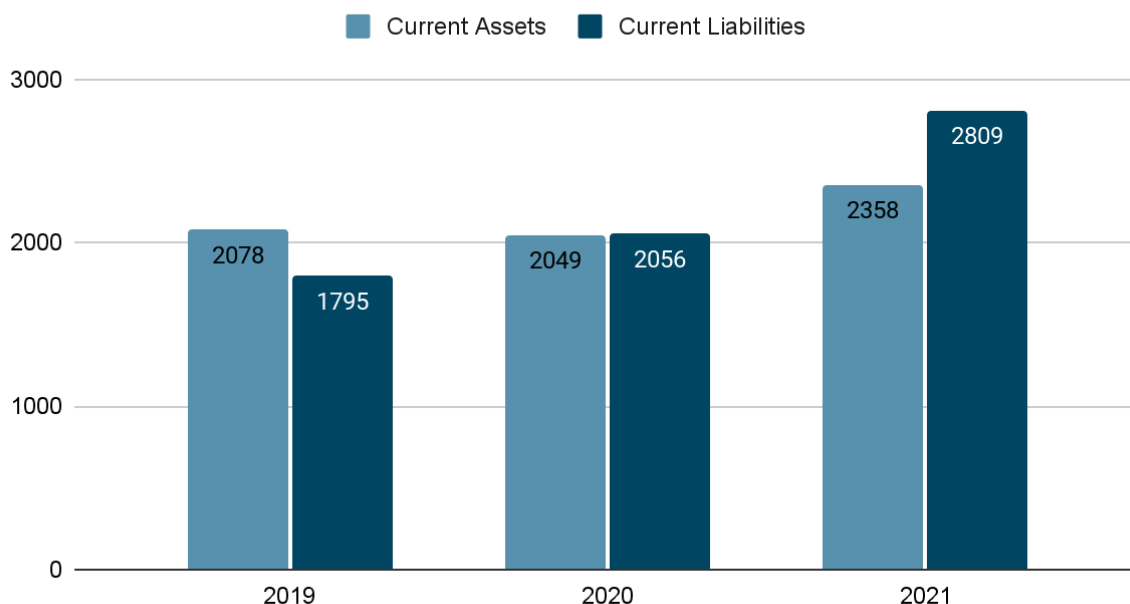
The GMM Grammy Public Company Limited core business are artist management, copyright management, merchandising, physical product, live performance, broadcast. The revenue structure comes from music business around 50%, home shopping around 40%, Movie and TV Satellite platform 10%. After a covid-19 pandemic reach in Thailand around early 2020, the company can not set any big event or concert which are their main business. Then the company used a strategy to run a music business on a streaming platform. They focus on facebook, instagram and youtube channels. In this way they can reach more customers during social distancing or lockdown policy. Everyone can connect to the music event or concert through electronic devices at home. The streaming platform can decrease cost of operation and advertising. Nowadays user use streaming platform are increase day by day, the company working on follow this music global trend.

Income Statement



Graph 9: Income statement of GMM Grammy Public Company Limited between 2019-2021 (Unit: Million baht)

Balance Sheet



Graph 10: Balance sheet of GMM Grammy Public Company Limited between 2019-2021 (Unit: Million baht)

As a result in the income statement this company got an impact from digital transformation which will cause a loss of net profit in 2020 but after they pass through the digital transformation, even though total revenue still decreases. Net profit in 2021 increased from 2020 by around 450% with lower total expense. The effect of running business through digital access or streaming platforms allows the company to reduce the cost of operation and marketing advertisement which lead to gain more profit margin.

Operating cash flow ratio

$$\text{Operating cash flow ratio}_{2019} = 446,953,925 / 1,795,880,953 = 0.25 \text{ or } 25\%$$

$$\text{Operating cash flow ratio}_{2020} = 175,389,157 / 2,056,950,321 = 0.09 \text{ or } 9\%$$

$$\text{Operating cash flow ratio}_{2021} = -100,716,464 / 2,809,599,560 = -0.04 \text{ or } -4\%$$

External financing index ratio

$$\text{External financing index ratio}_{2019} = -368,040,129 / 446,953,925 = -0.82 \text{ or } -82\%$$

$$\text{External financing index ratio}_{2020} = -1,204,961,029 / 175,389,157 = -6.87 \text{ or } -687\%$$

$$\text{External financing index ratio}_{2021} = 559,760,210 / -100,716,464 = -5.55 \text{ or } -555\%$$

The operating cash flow ratio has decreased for three consecutive years which show the company generates less cash from operating activities. External financing index ratio has a good result, it is negative for all three consecutive years which show the performance of the company's generated cash to finance business growth.

7. Conclusion and Recommendation

7.1 Conclusion

Nowaday everyone uses digital access in daily life, this research did study about how digital access has an influence on business growth in any way. Then come up with five factors that drive digital access on business which is ecosystem, research and development innovation, security, business effectiveness and covid-19. First to fourth factors are already having digital access in process, more or less. The last factor covid-19 pandemic is key that drives all business industries to digital transformation. This study will show the performance of the companies in each factor, how they handle digital transformation and show the results after passing through digital transformation.

First is the ecosystem, in this part it does not have strong evidence to confirm that digital access can help this business industry grow fast. It just uses digital technologies to create a renewable product or renewable energy. Most of business growth comes from global energy trends, due to everyone around the world getting more interest in renewable energy. If they use technologies which can create more capacity for renewable energy, then they can grow and expand business faster. Second is research and development, this part also does not have strong evidence to confirm business growth from using digital access. They show that using digital in research can create more value product with more acculated result, this can reduce cost in research and development of the companies. Third is the security, this business is direct to digital business due to cybersecurity becoming more important these days. When we use digital as the middle of every work process, data security is important. Cybersecurity is used to protect the company's data, personal data, etc. The company gets more attraction from customers and can expand business faster. Fourth is business effectiveness, they use technologies in digital helping in many ways. This study chooses the company that uses technologies in the production process and selling product channels. After the company uses machines to implement automation & censoring systems, decreasing energy consumption in the production line can decrease the cost of the companies and some human error of products. By changing the selling channel to mobile application it can reach more customers. In this way the company can increase revenue faster and expand product brands easier. The business effectiveness part still does not have strong evidence to confirm digital access can help business growth, I can say that it is a part of many factors that affect business growth. Last one is covid-19, after around the world suffered with covid-19 pandemic the lockdown policy and social distancing have been announced. People stay home and use the internet more in daily life. The sample of this part changes business strategies by running business on a streaming platform which can reach to everyone through the internet. After running business on streaming platforms the company has reduced cost of operation and marketing advertisement which leads to gain more profit margin. This part can strongly confirm that digital access has a good benefit to the company.

To sum up everything that has been stated so far, the five factors drive digital access, there are only two factors that have strong evidence to confirm digital access have an influence on business growth during covid-19 pandemic. The particular reason for the circumstances of the other three factors still do not have strong evidence to support this theory is technologies of the digital access is not a main point of business growth, it still have other outer factors that have more influence to the business growth.

7.2 Recommendation

Digital access has changed our lifestyle and life quality in many ways. This study has shown the effect of digital access in a business way, even though some factors can not confirm that digital access really has an effect on business growth due to limitation of information and time but they still show a direction and role of digital access in the business industry.

The limitation of information and time, in the future if I have more time I will add quantitative and qualitative methods to gain more information about the internal structure of the organization. Quantitative methods will use survey questions to ask employees about what they feel and how they handle digital transformation with the company strategies. This survey will be sent to many companies in the same industry. Then analyze and compare the companies in the same industry. Also, a qualitative method will do personal interviews with employees and ask in-depth about companies strategy in digital transformation during covid-19 pandemic. This will make the study have a multi case study of a sample company and may have better results and conclusions.

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