

EDITORIAL

Dear Readers,

Welcome to Volume 10, Number 1, of the ASEAN Journal of Management and Innovation (AJMI). In the preceding editorial, the acronym BANI, which stands for brittle, anxious, non-linear, and incomprehensible, was used to refer to the way the world has become. As explained in that editorial, it replaced another acronym, VUCA, its predecessor for decades, coined to describe the volatility, uncertainty, complexity, and ambiguity characteristic of the previous era.

Arguably, one source of anxiety contributing to making the current world brittle and incomprehensible – and also more complex and uncertain – is the launch in November 2022, of ChatGPT, an artificial intelligence (AI) chatbot developed by OpenAI to create text and image. Its high-voltage debut has not only sparked excitement and ignited a generative AI race. It is also engendering fear. In fact, its seemingly infinite possibilities are even beginning to scare its own creators. Understandably so. Being around machines that are smarter than any of us has troubling prospects for humanity, especially if the algorithms come to be controlled by evil actors, of whom there is no shortage. But even leaving aside those profound concerns about a potentially dystopian future, organizations are left with more prosaic questions as they must decide the level of their engagement with those large language models.

Legislators across the world are rushing to draft regulations to rein in the potential of generative AI to dramatically reshape the world. In February 2023, ministers from the 10-member Association of South-East Asian Nations (ASEAN) agreed to develop an ASEAN AI guide. Drafting is ongoing. The move by ASEAN to draw up governance and ethics guidelines for AI that will impose guardrails on the booming technology comes as the EU and the US are expected to release a draft of a voluntary AI code of conduct within weeks. Companies around the world are also setting up guardrails on AI chatbots.

AI, though, is not new to the world – generative AI is. Robots are now standard equipment in many plants. But robotics is fast evolving as exemplified by rapid advances in the development of humanoid robots. Yet, as reported by **Scott S. Roach** and **Alexander Franco** in *A Typology of the Receptivity of Humanoid Robots by Students in a Thai International University: Results of a Multivariate Cluster Analysis*, inquiries regarding their receptivity by humans is still quite limited with no studies involving a substantial number of respondents being conducted in Southeast Asia. This makes this research paper in the context of Thailand especially relevant.

Naturally, to be successful, innovation needs to be broadly accepted. Still, as we learned from the COVID-19 pandemic, innovative practices, which some sections of society may initially be slow or reluctant to endorse, can eventually become widely popular. This has been the case, for example, with food delivery services, whose level of acceptance is investigated by **Titima Thanapakpawin** in *An Investigation of Customer Acceptance of Food Delivery Systems*. This has also been the case with Live streaming, whose impact on users' online purchase intention is precisely at the core of **Pongsakorn Limna**, **Tanpat Kraiwanit**, and

Kris Jangjarat's article, entitled *Adopting the Technology Acceptance Model (TAM) to Explore Online Purchase Intention via Facebook Live Streaming: Empirical Evidence from Bangkok, Thailand*. The exponential rise in the number of shoppers joining virtual communities and sharing their experience with goods and services on internet platforms not only impacts online sales. As determined by **Sopheaninh Khoeun, Chonnatcha Kungwansupaphan,** and **Ubonwan Suwannapusit** in *The Influence of Social Media Usage on Entrepreneurial Opportunity Recognition: A Perspective from Ratanakiri Province, Kingdom of Cambodia*, it can also help entrepreneurs identify business opportunities.

Another practice that gained greater acceptance during the pandemic is remote work, which is the focus of two articles in this volume. In *Efficiency of Remote versus Office Work in IT Project Implementation and Engineering Mindset of Project Team Members*, **Kittisak Umaji** and **Worapat Paireekreng** compare the efficiency and outcomes of IT projects when implemented in a remote environment as opposed to an office setting. And in *Organizational Resources and Work Engagement as Related to New Ways of Working at Private Universities in Bangkok, Thailand*, **Liqian Yang, Tawonga Patience Tembo,** and **Fritz Wink** seek to determine the impact of organizational resources on work engagement and job commitment.

Work engagement and job commitment, though, may vary from one generation to the next. As argued by **Chayapon Soontornwiwattana** in *Workforce Expectations of the New Generation: A Case Study of Thai Social Science Pre-Graduates*, this makes understanding the expectations of the new generation workforce (also known as 'Generation Z') critical as it has, among other consequences, strong implications for organizational onboarding.

One contribution to this volume focuses on a specific financial issue. In *CAPE Ratio as a Prediction Tool for the Stock Exchange of Thailand (SET)*, **Budsabawan Maharakkhaka, Boonyachote Suteerawattananon, Sirikarn Tirasuwanyasee,** and **Sutatt Ramasoot** investigate the predictability of the the Cyclically Adjusted Price-Earning (CAPE) ratio on returns on the Stock Exchange of Thailand (SET). As they point out, although the SET is the second largest capital market in South-East Asia, few empirical research studies on the CAPE ratio performance focus on the Thai capital market.

Finally, in *Transformational Leadership and Financial Performance: The Mediating Role of Corporate Reputation*, **Devie, Hendri Kwistianus Alexandrio Christian Gunawan,** and **Felix Adrian Jonathan** seek to determine the effect of the transformational leadership style on the reputation and financial performance of manufacturing companies listed on the Indonesian Stock Exchange.

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Adopting the Technology Acceptance Model (TAM) to Explore Online Purchase Intention via Facebook Live Streaming: Empirical Evidence from Bangkok, Thailand

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Abstract

Live streaming, such as, for example, Facebook Live streaming, has been steadily growing in popularity in recent years, which makes understanding how it contributes to online purchases especially critical. This qualitative study seeks to do just that. Using the Technology Acceptance Model (TAM), which posits that both perceived usefulness and perceived ease of use influence the decision to adopt a new technology, it explores customer purchase intention via Facebook live streaming. Purposive sampling was utilized to select Bangkok-based Facebook Live customers for in-depth interviews. The data collected was analyzed using content analysis and NVivo software. The results indicate that online consumers' perception of usefulness and ease of use influence customer purchase intention via Facebook Live streaming. The ease of leaving comments and receiving responses from the host creates a seamless and interactive shopping experience and plays a crucial role in the decision-making process. Informative content positively impacts customers. The findings may assist Facebook Live sellers improve service and enhance customer satisfaction and loyalty.

Keywords: Perceived Usefulness, Perceived Ease of Use, Intention, Facebook Live.

1. Introduction

The growing importance of social networks and their impact on online business has been widely acknowledged (e.g. Kraiwanit & Sornsrimai, 2017; Napawut et al., 2022; Obermayer et al., 2022). By creating a world without boundaries and connecting people across the world, the internet has caused ecommerce to grow exponentially and online sales transactions to keep rising at a pace unimaginable a few decades ago. Due to the convenience of making purchases online at their own pace, literally billions of people are online every day; many of them potential customers for businesses offering online sales and many of them preferring the online purchase experience to the in-store purchase one (Chusminah & Sugiyah, 2020). Some also have severe time constraints and find it difficult to shop at physical retail stores. The exponential rise in the number of buyers has been accompanied by a significant rise in the number of sellers, who, given the fierce competition, must look for ways to promote their products (Cheong et al., 2020). Many now view social media as a tool for improving customer relationships as online interactions facilitate the exchange and sharing of information and allow

for widespread communication among individuals (Valmohammadi, Taraz, & Mehdikhani, 2021). As a result, live streaming, such as Facebook Live, has been growing in popularity among sellers (and of course buyers) in recent years. For many brands and organizations across all sectors, this is no longer a passing fad, but a fully accepted marketing strategic tool (Jakwatanaham, Phayaphrom, & Nurittamont, 2022). Live video streaming has emerged as a powerful tool for online businesses to gain a competitive advantage. By leveraging live streaming, organizations can engage with their customers in real-time, build a loyal following, and generate interest in their products or services. Moreover, live streaming can also help them reach a wider audience, as it can be easily shared and accessed through social media platforms (Skjuve & Brandtzaeg, 2019).

The increasing popularity of live video streaming has not only created exciting possibilities for businesses looking to enhance their online presence and engagement with their target audience. It has also paved the way for new research opportunities (Wohn & Freeman, 2020; Zhang et al., 2020) and heightened the relevance of studying its impact on online consumption in social commerce (Jakwatanaham et al., 2022). In short, understanding the online purchase intention of live streamers has become critical (Siripipatthanakul et al., 2022a). A person's online purchase intention is closely linked his or her behavioral intention, which refers to a person's conscious plan or the likelihood that he or she will engage in or refrain from engaging in a specific behavior, in this case personal acceptance of IT systems (Haimson & Tang, 2017). One theoretical model widely used to make this determination is the Technology Acceptance Model (TAM) initially proposed by Davis (1989) and premised on the belief that behavioral intention determines system use. TAM is used to predict users' intention to accept technology based on their perceptions (Woodeson, 2022). The model includes two independent variables, perceived usefulness, and perceived ease of use. Since the model's acceptability impacts users' attitudes, behavioral intentions, and actual consumption, it can be used to explain the causal relationship between customers' perceptions of usefulness and ease of use and their attitudes and purchase intentions in the context of online purchases (Kei & Chaichi, 2021).

Previous studies have predominantly used quantitative methods, such as survey questionnaires, to explore the relationship between TAM and behavioral intention, causing a qualitative approach to be underutilized (Suprawan, 2017; Zhang, Ali, & Kanesan, 2022). This study, however, favors a qualitative approach. Specifically, it uses in-depth interviews to gain valuable insights and a deep understanding of customers' online purchasing behavior and answer the following research question: How do perceived usefulness and perceived ease of use influence the intention of consumers to make online purchases through Facebook Live Streaming? It also incorporates TAM's perceived usefulness and perceived ease of use. The study holds the potential to assist e-marketers in gaining a comprehensive understanding of their customers' behaviors in online purchases.

2. Literature Review

- *Live Streaming*

Live streaming is the broadcasting of video content in real-time over the internet, which allows viewers to watch content as it is being created or performed, rather than having to wait for a pre-recorded video to be uploaded (Liu et al., 2022). Live streaming can be used for a wide range of purposes, including entertainment, education, marketing, and communication. It has become extremely popular in recent years, thanks to the advent of social media platforms such as Facebook, Instagram, and YouTube, which have all added live streaming features to their platforms (Kutuchief, 2022). The increasing availability of high-speed internet connections has also contributed to making live streaming more accessible to a wider audience (Rogers, 2023). One of the key advantages of live streaming is its interactivity. Viewers can interact with

content creators in real-time through comments and live chat, making the experience more engaging and immersive (Yuen, 2023). This interactivity can also help content creators to build a loyal following and create a sense of community around their brand or content (Chen & Lin, 2018; Liu et al., 2022). In summary, live streaming offers a unique and powerful way to connect with an audience in real-time, making it an increasingly important tool for businesses, educators, and content creators alike (Dredge, 2017; Sandler, 2017).

- Facebook Live

Facebook Live was first introduced in 2015 as a platform for celebrities and public figures to broadcast live content (it was then launched as a full platform in April 2016). Facebook Live, a popular Facebook feature added to use live broadcasts, provides video recording and broadcasting capabilities, as well as a channel for instant communication between the broadcaster and the audience (Jakwatanaham et al., 2022). Also including in it is the ability to express the audience's opinions at the time (Jakwatanaham et al., 2022). While Facebook Live streams can be broadcast to the public, most people only see streams broadcast by people they follow, either through notifications or when a stream appears in their newsfeed. Users can also search for event live streams using Facebook Live Map. Facebook Live streams offer a variety of interactions, including comments (which appear to the right of the video for viewers and below the video for broadcasters) and reactions (which include Like, Love, Haha, Wow, Sad, and Angry) (Rein & Venturini, 2018). When clicked or touched by the viewer, the latter shows a small photo of the viewer's face before transforming into the reaction's emoji while floating across the video screen (Haimson & Tang, 2017; Skjuve & Brandtzaeg, 2019).

- Online Purchase Intention

The intention to purchase has been defined as the desire to buy a specific product or service within a specific time frame (Lin & Chen, 2009; Peña-García et al., 2020). It somehow predicts what consumers believe they will buy in the future to meet their needs and desires. Purchase intention in consumers is classified as a complex process that is usually related to their behavior, perception, and attitude (Dastane, 2020). A consumer's willingness to purchase goods or services from an e-commerce company has an impact on his/her online purchase intention (Naseri, 2021). Consumers who are knowledgeable about and familiar with e-commerce and understand what is happening, why it is happening, and what will happen next are more likely to visit an online shopping site with the intent to buy. Consumers' purchase intention, however, may change due to unforeseen circumstances. Thus, it is critical for businesses to take proactive steps to ensure that their products and services are positively perceived by their customers as purchase intentions are frequently influenced by a company's marketing strategy, attitudes, how much they value the deals it offers, and so on. Therefore, it is an obvious call for online companies to meet consumer demand to improve purchasing intentions as they must comply with consumer requirements and standards (Naseri, 2021).

- The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical model initially proposed by Davis (1989) to explain personal acceptance of IT systems. It is based on the rational behavior theory (Davis, Bagozzi, & Warshaw, 1989; Yousafzai, Foxall, & Pallister, 2010), and premised on the belief that use is determined by behavioral intentions, which are influenced by behavioral attitude, itself influenced by perceived usefulness and ease of use (Shao, 2020). Perceived usefulness is an assessment of the benefits provided by technology to make it easier for users to obtain the desired services. It is the extent to which a user's faith in technology can improve and enhance its effectiveness and performance. An individual's interest in using technology can result in a good assessment of perceived usefulness. If an individual believes that technology can be useful, he or she will use it. Wardana et al. (2022) determined that the

advantages of using technology are closely related to productivity, effectiveness, task performance, the need for work, and overall benefits. As to perceived ease of use, it refers to a user's willingness to use a system that requires no effort on his or her part. The term “easy to use” refers to the level of difficulty in understanding and the duration of use (Sitthipon et al., 2022). It is regarded as an important factor not only for the adoption of technology, but also for its long-term use. The perceived ease of use of a technology increases the likelihood of its being used (Prastiawan, Aisjah, and Rofiaty, 2021). Both usefulness and ease of use are important factors in determining a user's behavioral intention and both have a positive impact (Woodeson, 2022).

- Related Research

To and Trinh (2021) identified the key factors influencing behavioral intent to use mobile wallets in Vietnam. They found that perceived ease of use, usefulness, and enjoyment all have a positive and significant impact on the behavioral intention to use mobile wallets. Alfadda and Mahdi (2021) investigated the relationship between the TAM variables and the use of the Zoom application in language learning as well as how gender and experience influence the use of technology. Their findings show a strong positive relationship between actual Zoom use and students' attitudes and behavioral intentions. In addition, it was found that there is a positive relationship between computer self-efficacy and the other variables considered in this study, namely, perceived usefulness, perceived ease of use, attitude, and behavioral intention. Martin-Garca, Redolat, and Pinazo-Hernandis (2022) pinpointed the major determinants influencing older people's intention to use digital technology in their daily lives. The TAM turned out to be a useful model for explaining older adults' intentions to use digital technology, with high predictive power, highlighting perceived usefulness and perceived ease of use as the main predictor variables. Van, Quynh, and Doanh (2022) investigated the factors influencing tea-producing farmers' intention to sell their products through e-commerce exchanges (ECEs). They found that farmers' intention to use ECEs to sell their products is significantly influenced by perceived usefulness and perceived ease of use. Wardana et al. (2022) studied the impact of convenience, perceived ease of use, and perceived usefulness on generation Z's intention to use an e-Wallet in Surakarta, Indonesia, and concluded that perceived ease of use has a positive and significant effect on user intention. Perceived usefulness is positively influenced by perceived ease of use and influences the intention to use e-Wallet significantly.

3. Methodology

A qualitative approach was used as the research strategy in this study. The goal of qualitative research is to understand the context in which individuals or groups make decisions and behave in specific ways and to explain why the precisely observed phenomenon occurred (Mohajan, 2018). Moreover, two-way communication in the form of in-depth interviews facilitates the collection of additional data. It provides in-depth knowledge and allows the researchers to ask questions outside of the parameters of semi-structured surveys, making data collection and follow-up more efficient (Siripipatthanakul et al., 2022b). As part of the process of collecting primary data, the researchers conducted an in-depth review of secondary data (documentary method) for appropriate key survey questions. Purposive sampling was used to select interviewees. This approach, frequently used in qualitative research, prompts researchers to select the most useful sample based on their expertise.

The goal is to gain in-depth knowledge about a specific phenomenon or population (Etikan, Musa, & Alkassim, 2016; Moser & Korstjens, 2018). Francis et al. (2010) and Namey (2017) have proposed that conducting a minimum of six interviews is generally recommended in qualitative research to achieve data saturation. Consequently, in-depth interviews were conducted with eight Facebook Live customers in Bangkok, Thailand, using purposive

sampling. To be eligible to participate, individuals had to meet the following criteria: (i) be a customer of Facebook Live; (ii) reside in Bangkok; (iii) be at least 18 years old; and (iv) have recently made online purchases through Facebook Live Streaming. Data was collected between October and December 2022. As a qualitative method for systematically and objectively describing and quantifying specific phenomena, using valid inferences drawn from verbal, visual, or written data (Vespestad & Clancy, 2021; Vipphanphong et al., 2023), content analysis was utilized to analyze the qualitative data gathered through in-depth online and face-to-face interviews. Moreover, NVivo, a qualitative data analysis software, was used to interpret the results.

4. Results

Table 1 shows the respondents' demographic profile. A majority of them are in their 30s and 40s and employed in a vast variety of fields in Bangkok expect for one woman out of the five females interviewed who is a housewife. As one of the criteria to qualify, all of them purchase items from Facebook Live streaming at least twice a month.

Table 1: Respondents' Demographic Profile

| No. | Age | Gender | Occupation | Date and Time of Interview |
|--------------|-----|--------|-------------|------------------------------|
| Respondent 1 | 34 | Female | Nurse | October 19, 2022 at 10:30 am |
| Respondent 2 | 28 | Male | Teacher | October 20, 2022 at 09:00 am |
| Respondent 3 | 31 | Female | Chief | October 20, 2022 at 11:00 am |
| Respondent 4 | 47 | Male | Policeman | October 22, 2022 at 09:00 am |
| Respondent 5 | 38 | Female | Doctor | October 22, 2022 at 11:00 am |
| Respondent 6 | 39 | Female | Housewife | October 23, 2022 at 09:00 am |
| Respondent 7 | 42 | Female | Businessman | October 23, 2022 at 11:00 am |
| Respondent 8 | 42 | Male | Engineer | October 25, 2022 at 01:00 pm |

- Content Analysis

Every respondent interviewed indicated that their intentions to purchase online via Facebook Live streaming were influenced by their perceptions of usefulness and ease of use. As potential customers, they could obtain detailed product information through online video streaming since the host, generally the seller, would provide many useful product information that would benefit them and lead to purchase. According to one of the interviewees:

“Live streaming on Facebook is incredibly easy [...]. The best part about Facebook is how simple it is to participate in the fun of live streaming videos. Facebook's video support policies are a little hazy, but in general, you can stream in 720p at 30 frames per second and have no problems with your viewers. Your webcam, a camcorder, or even a multi-camera setup can be used to stream. Any setup can be optimized if you know how to keep an eye on the caliber of your streams”.

As another interviewee pointed out, the Covid-19 pandemic has been instrumental in increasing online purchases: He, as well as his family and friends, *“have become more willing to make purchases through live stream selling since the COVID-19 outbreak.”* As he further stated, their *“usage of social video and online shopping has increased dramatically over the past year and is likely to do so in the years following COVID-19 as it is easy and very useful.”*

Clearly, the pandemic has been an accelerator of trends. Because of the need for social distance, it has made online shopping a necessity, even for those hitherto reluctant to use e-commerce.

The pandemic, however, is not the only reason for the exponential growth of online shopping via Facebook. *As one interviewee stated, "Facebook has offered a fully integrated shopping experience with the launch of Live Shopping, which in my opinion makes it simple for companies to boost online sales and for customers to shop their favorite brands."* All the respondents interviewed concurred that if they intended to make an online purchase through Facebook Live Streaming, they could go directly to Facebook Live and see the streaming of a specific product that was promoted by a host.

Furthermore, if it was easy for them, they intended to make an online purchase via Facebook live streaming, for example, by making the supporting tools appealing and simple to use. They only needed to leave a comment, and the host would respond to whatever question the customers had. As one of the users interviewed explained:

"It makes sense that using the Facebook app to stream live via Facebook Live should be simple, and it is. By tapping on the "what's on your mind" field and selecting "Go Live" as the type of post you want to make, you can stream directly from your profile page. Alternatively, you can perform the same action from your feed by tapping the camera icon in the top left corner. It is super easy and very useful."

That it is "super easy and very useful" is an opinion shared by all the participants to this study. Most comments made were dithyrambic and full of praises for the application: *"Online buyers can easily view the products, add them to their carts, and make purchases. As viewers ask questions about sizing and fit or make direct purchases while watching the live stream, sellers can also go live and show off their products in real-world settings."* Among other features listed as contributing to making Facebook very appealing for live streaming video are *"its well-known reach, the best targeting and analytics capabilities in the industry, the advertising platform, and the synergy with Instagram."*

- NVivo Analysis

The interpretation and analysis were also based on NVivo. To make the results more understandable, a word frequency query was run in NVivo. The words frequently used by the respondents during the interviews are displayed in the word cloud in Figure 1. Word trees (Figure 2, 3, 4, and 5) display the results as a tree with branches representing the various contexts in which the word or phrase occurred.



Figure 1: Word Cloud

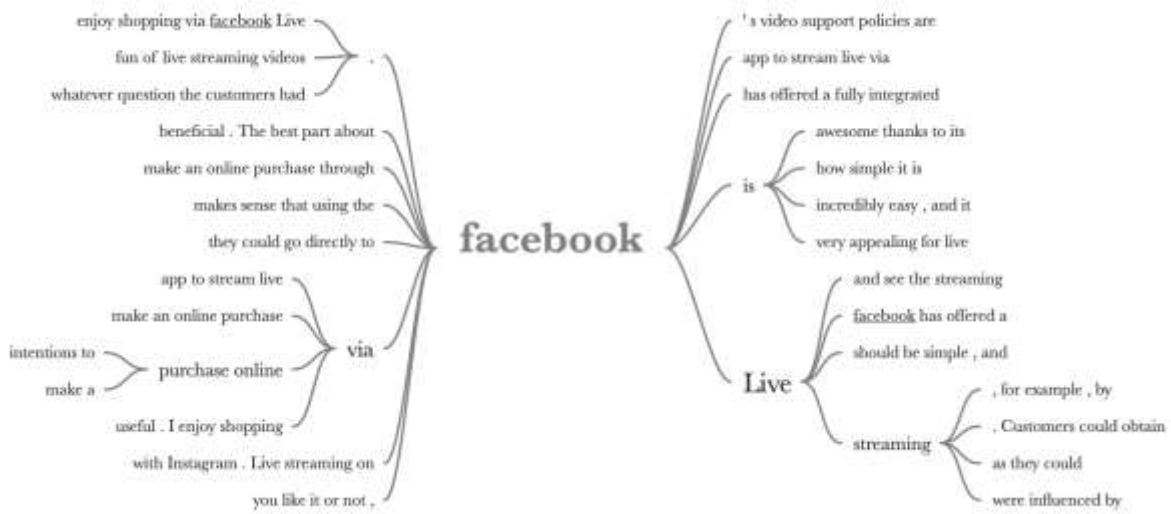


Figure 2: Word Tree (Facebook Live)

Based on the insights from interviewees and as depicted in Figure 2, Facebook Live streaming emerges as a valuable platform for providing detailed product information. The hosts, typically the sellers themselves, play a crucial role in sharing useful insights about the products showcased. This was perceived as highly beneficial by customers and has influenced their purchase decisions positively. Additionally, the ease and accessibility of participating in Facebook Live streams were highlighted as positive aspects, as users found it effortless to join and engage in live sessions.

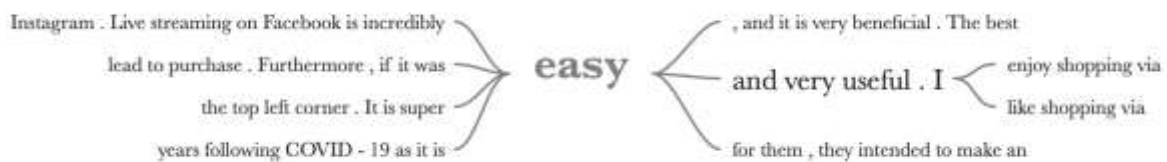


Figure 3: Word Tree (Easy)

Based on the feedback from the interviewees and as indicated in Figure 3, ease of use emerges as a prominent factor influencing the decision to make online purchases through Facebook Live streaming. All participants shared a common perception that Facebook Live streaming is remarkably user-friendly and straightforward, which significantly adds to its attractiveness as a platform for online shopping.



Figure 4: Word Tree (Useful)

The comments from interviewees, as illustrated in Figure 4, emphasize the significant benefits of Facebook Live streaming for online purchasing. The interviewees unanimously acknowledged the usefulness of detailed product information provided by hosts during live streams. This information was perceived as highly useful by potential customers, enabling them to make informed decisions and ultimately increasing their likelihood of making a purchase.

5. Discussion and Conclusion

The findings in this study highlight the significance of perceived usefulness and ease of use in influencing customers' intentions to make online purchases via Facebook Live streaming. As we just saw, the respondents in this study recognized the value of useful product information provided by sellers during live stream sessions. It plays a crucial role in their decision-making process. This is in keeping with the notion that informative content can positively influence customers and lead to conversions (Kumar, Lall, & Mane, 2017; Saputra & Darma, 2022). Moreover, the ease of use of Facebook Live streaming and its supporting tools emerged as equally important factors. All the participants explained that the simplicity and convenience of the platform encouraged them to make online purchases. The ability to directly access Facebook Live and watch specific product streams, coupled with the ease of leaving comments and receiving responses from the host, created a seamless and interactive shopping experience, which they all enjoyed as attested by their aforementioned comments. These findings reflect the growing trend of consumers seeking engaging and informative content while shopping online. The live format of Facebook Live streaming allows for real-time interaction, fostering a sense of connection and trust between sellers and buyers. This level of interaction can in turn lead to increased customer satisfaction and confidence in making online purchases. The study's results clearly emphasize the importance of optimizing the usefulness and ease of use of Facebook Live streaming for sellers.

By providing detailed and relevant product information, sellers can meet the needs and preferences of potential customers. Additionally, enhancing the user experience and simplifying the purchasing process can further motivate customers to engage in live stream commerce. The results support previous research by Kumar et al. (2017), who concluded that the underlying factors in the behavioral intention to use mobile banking services are perceived usefulness and perceived ease of use, social influence, and trust propensity. They are also consistent with Lai's (2017) findings which confirmed that security, perceived usefulness, and perceived ease of use are important factors that influence consumers' willingness to use a single platform payment system. Organizations will be able to use the study information to develop products and services that meet consumers' single platform e-payment system requirements while also meeting their corporate social responsibility objectives.

Furthermore, Saputra and Darma (2022) use the extended TAM approach to examine the level of intention to use blockchain in Indonesia, specifically the My-T Wallet developed by Tokoin. The findings demonstrate that the general perception of the usefulness of the My-T Wallet application is most strongly influenced. Meanwhile, the user interface in My-T Wallet has the greatest influence on perceived ease of use. The positive behavior of users then has a strong impact on their intention to use the My-T Wallet application. On the other hand, application users' trust must be continually increased by paying more attention to government regulations and security issues. Abu-Taieh et al. (2022) also concluded that the behavioral intention to use mobile banking is influenced by effort expectancy, performance expectancy, perceived risk, perceived trust, social influence, and service quality.

To conclude, in today's digital age, It is imperative that businesses operating in the realm of online commerce understand the impact of perceived usefulness and ease of use on their success. By acknowledging the significance of these factors and adapting their strategies

accordingly, sellers can effectively cater to customer preferences, which leads to increased customer satisfaction, loyalty, and overall business performance. This study's findings provide further evidence of the pivotal role that perceived usefulness and ease of use play in influencing customer purchase intentions through Facebook Live streaming. By prioritizing the delivery of valuable content and optimizing the user experience, businesses can harness the full potential of live streaming as a powerful tool for social commerce.

- Managerial and Theoretical Implications

In light of the above, people's intention to buy online via Facebook Live streaming were influenced by their perceptions of usefulness and ease of use. The findings may assist Facebook Live sellers improve their services to respond to customer behavior in the digital age. Furthermore, owners in any online industry could incorporate TAM into their business model to improve consumer behavior and increase customer satisfaction and loyalty. Facebook Live sellers, for example, should develop a simple payment method on Facebook Live. Moreover, customers should benefit from the product or service information. Hence, high business performance will be incurred.

In terms of research implications, this study adds to the existing literature on the TAM model (perceived usefulness and perceived ease of use), Facebook Live, and online purchase intention. Therefore, this study's findings may aid academics in broadening their research by incorporating more potential elements. The measurements could be used to guide future research on the TAM model, Facebook Live, and online purchase intention.

Limitations and Recommendations for Future Research

This study contains several limitations. For one, it used the TAM Model to examine the impact of perceived usefulness and perceived ease of use on customer purchase intention through Facebook Live Streaming. It is recommended that further research be conducted to explore the applicability of TAM in the context of other online platforms, such as, for example, TikTok and Instagram.

Moreover, future research could explore the applicability of the TAM framework in dissimilar cultural contexts. Comparing and contrasting the results across different regions and cultures, or sub-regions and sub-cultures, could provide further insights into the generalizability of the model.

In addition, conducting longitudinal studies could help to examine the stability and consistency of the relationship between TAM constructs and online purchase intention through Facebook Live Streaming over time. Such studies could also seek to determine how changes in consumer behavior and technological advancements impact the model.

While TAM is a widely used theoretical framework for studying technology adoption, future studies could be conducted applying alternative frameworks to examine online purchase intention via Facebook Live Streaming, two in particular, the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Extended Unified Theory of Acceptance and Use of Technology (EUTAUT).

The respondents in this study were Facebook Live customers located in the province of Bangkok. Focusing on only one province may not adequately represent Thailand. It is therefore suggested that more provinces be added in order to reflect the diversity of Thailand's population and regional specificities.

Future studies could also utilize other qualitative research methods, such as focus groups, to gain a deeper understanding of the reasons behind consumer behaviors and decision-making processes in the context of online purchase intention via Facebook Live streaming.

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A Typology of the Receptivity of Humanoid Robots by Students in a Thai International University: Results of a Multivariate Cluster Analysis

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Abstract

Despite the rapid advances in the development of humanoid robots (HRs), inquiries regarding their receptivity (user acceptance) by humans is still quite limited with no studies involving a substantial number of respondents being conducted in Southeast Asia and, specifically, Thailand. Therefore, this a pioneering study that examined students in the MBA program of an English-medium division within an international university in Bangkok, Thailand. A self-administered, anonymous questionnaire was developed to generate data. A typology of receptivity to humanoid robots was then created by using a factor analysis that generated four significant factors (HRs viewed as beneficial, viewed as potential friends, viewed with fear, and viewed as potential sex partners) which were then used for a multivariate cluster analysis with demographic classifications. The results indicated that none of the clusters displayed significant difference in demographic make-up. However, the groupings involving gender and nationality were close to significance and may be worthy of further examination in subsequent studies.

Keywords: Humanoid Robots, Multivariate Cluster Analysis, Principal Component Analysis, Receptivity of Robots, Typology.

1. Introduction

Both the private and public sectors across the world are aggressively engaged in the development of humanoid robots (hereinafter referred to as 'HRs'). This is especially true of the Defense Advanced Research Projects Agency of the U.S. Department of Defense that plans to use such robots for military combat, including as pilots and drivers of military vehicles. Others are developing HRs for use as social robots involved in direct human-robot interactions within the fields of healthcare, retail sales, tourism, office work, and other areas (Dahlin, 2019, Ford, 2016, 2021). HRs are machines that are designed to aesthetically resemble a human being (including with bipedal locomotion) but also to act as much as possible as a human during human-robot interactions (Cangelosi & Schlesinger, 2022). To accomplish this, humanoid robots are being developed to have ample foundational knowledge that they do not lose since they are synthetic and not organic, and to build from that foundational knowledge with machine learning capabilities. The ideal is a combination of aesthetic and mobile similarities paired with rapid-response familiarity in normal sounding communication and behavioral norms similar to humans that will allow these machines to fulfill a wide variety of functions in all sectors of society in an autonomous or semi-autonomous mode (Cangelosi & Schlesinger, 2022; Grupen, 2023).

Academic research regarding the receptivity of HRs is at its infancy, understandably so, given the state of technological development of the subject being studied. Much of the literature has relied on photographs or exposure to early, primitive semi-humanoid models mainly used for educational and promotional purposes, for example, Aibo (Bartneck et al., 2006), ASIMO (Choi, Lee, & Han, 2008), iCub (Pandey & Gelin, 2018, Tsagarakis et al., 2009), Kismet (Trovato, Kishi, & Endo, 2013), Pepper (Castelo & Sarvary, 2022; Pandey & Gelin, 2018), and ROBOTOR (Han et al., 2009). Research instruments to gauge receptivity have varied in what could be described as pioneering efforts to explore different aspects of the phenomenon. Most survey instruments have been in the form of a psychological inquiry, dealing with fear and anxiety regarding social acceptance of and exposure to HRs. The Negative Attitudes Toward Robots Scale (created in 2006) utilized psychometric testing with 14 examined items that primarily focused on assessing fear and anxiety. The other most prominent research instrument is the Frankenstein Syndrome Questionnaire, (created in 2012) which examined 30 items that also served as a psychological tool to study aspects of trustworthiness and apprehension regarding humanoid robots (see Krageloh et al., 2019 for an analytical discussion of the two instruments cited above). Most of the studies exploring receptivity of HRs, that used a substantial number of respondents, have focused on the United States, Europe, and Japan, with some comparing respondents from these three regions (see list of reviewed articles in Lim, Rooksby, & Cross (2021) and Merkle (2021). In the Pacific Rim of Asia, there have also been limited studies involving mainland China and South Korea (Lim et al., 2021). However, to date, no studies involving receptivity of HRs have been conducted in Southeast Asia and, specifically, Thailand.

2. Theoretical Perspective and Research Questions

- *Typology*

The term ‘typology’ refers to a classification system used in research to group and categorize people, objects, or phenomena based on shared characteristics (Nichols, 2007). Typologies are vital in research because they can facilitate identifying patterns and trends in their data that may not be immediately apparent without classification. This can help in identifying similarities and differences between groups and in developing hypotheses for further investigation (Creswell & Poth, 2018; King, Keohane, & Verba, 1994; Mithun, 2016; Nichols, 2007). As an initial step towards developing a receptivity typology, a framework was created using 15 questions that constituted the attitudinal questions of a survey given to students. These 15 items were created to provide data for a principal component analysis and then a factor analysis to provide key factors that explained the majority of the variance in the data.

- *Benefits Associated with HRs*

The literature of humanoid robots indicates disparity as to the overall benefits of introducing such robots (Brynjolfsson & McAfee, 2016; Carbonero, Ekkehard, & Weber, 2018; Choi et al., 2008; Dahlin, 2019; Ford, 2016, 2021; Miller & Atkinson, 2013; Morikawa, 2017; Oxford Economics, 2017, 2019; Rodgers & Freeman, 2019). Out of the fifteen questions used in the study’s survey, the following five were used to address the individual considerations of the respondent as well as the perceived overall (macro) societal benefits:

1. When available, I intend to buy an HR.
2. I would patronize a business using HR, if HRs resulted in lower prices.
3. HRs will help the economy become more efficient.
4. I believe that HRs will be widely accepted by society.
5. I like the fact that HRs cannot get angry at or abusive to people.

Academic literature on HRs also focused on the ability to befriend such robots with the expectation that such exchanges would emulate real human interpersonal communications as much as possible with the added possibility of friendship with an entity that did not insult, abuse, or lie while providing unbroken loyalty, resolute trustworthiness, and overall support as a moral agent (Archer, 2021; Emmeche, 2014; Jecker, 2021a; Marti, 2010; Samani et al, 2013; Samani & Cheok, 2010; Sullins, 2006). The items that focused on friendships included:

6. I believe I can share my emotions with HRs.
7. An HR can be as good a friend as a human.
8. HRs may be able to tell right from wrong.
9. I believe I can work well with an HR.

The sentiments of fear and anxiety regarding interaction with HRs are prominent in academic literature and in the press. This negativity ranges from fear of job displacement to physical harm and also to a belief that humanoid robots will eventually control, enslave, or even destroy humans (Barton, 2010; Cheshire, 2015; Ford, 2021; Kaplan, 2004; Kamide, et al., 2012; Miller & Atkinson, 2013; Morikawa, 2017; Rodgers & Freeman, 2019). Three items on the survey addressed fear and anxiety:

10. I think HRs may try to control humans.
11. I think HRs might lose control of HRs.
12. I believe HRs may take my job in the future.

- HRs and Intimacy

There is a growing body of literature exploring various aspects of physical intimacy, even of a sexual nature, since there are HRs that are fully anatomically correct (Cheok & Levy, 2018; Earp & Grunt-Mejer, 2020; Fosch-Villaronga & Poulsen, 2020; Frank & Nyholm, 2017). The implications of widespread sexual activity with such robots could challenge traditional relationships between humans (including the possibility of marrying a robot) and, over time, possibly lowering the population of the more prosperous nations where HRs will be incorporated sooner (Goldfeder & Razin, 2015; Horton, 2015; Jecker, 2021b; Levy, 2007, 2020; Rigotti, 2020; Zhou & Fischer, 2019). Three items explored this subject:

13. It is OK to have sex with a HR.
14. I plan to have sex with an HR possible.
15. People who have sex with a HR are sick.

3. Methodology and Data Collection

- Respondents

To create a typology of receptivity of HRs, this study utilized convenience sampling to examine students in the English-medium division of an MBA program in an international university in Bangkok, Thailand. The ample diversity in this group regarding the demographic variables of age, ethnicity, gender, and marital status allowed for a more robust analysis pertaining to the diversity that exists in actual work environments. The total population of the English-medium division was 460, and therefore, a sample of 210 was determined as appropriate as per Krejcie and Morgan's (1970) table for tabulating an inferential sample size. The sample population came very close to the actual percentage breakdown by age, ethnicity, and gender. Regarding age, it ranged from 21-25: 30% sample (63 students) v. 32% actual; 26-30: 33% sample (69 students) v. 32% actual; and 31-52: 37% sample (78 students) v. 36% actual. Nationality was divided into two groups: Thais at 74.3% (158 students in the sample) v. 73.5% actual and international students at 25.7% (52 students) v. 26.5% actual. Regarding gender: Males in the sample were: 41.5% (87 students) v. 43% actual; females in the sample: 58.5% (123 students) in the sample v. 57% actual. The institution had no data regarding the marital status of students.

The sample breakdown was the following: 151 single students (72% of the sample) and 59 married students (28% of the sample).

- *Research Instrument*

A self-administered questionnaire of 15 attitudinal questions, consisting of a 4-point forced-Likert scale, was given to students in a classroom setting during a one-semester period. The 4-point forced-Likert scale ran from “Strongly Disagree” (weighted as 1) to “Strongly Agree” (weighted at 4). A neutral option (e.g., “Not Sure”) was not used since Thai culture discourages the practice of asserting opinion (*kreng jai*) when possible (Calderon et al., 2015; Holmes, Tangtongtavy, & Tomizawa, 1997; Suntaree, 1990). The questions used in this survey were designed by the authors based on the literature review conducted for this study since no previous surveys had been developed to cover the dimensions of such an analysis. As indicated in the review of the relevant literature in the previous section, the items developed express the content of numerous scholarly works that examined thoughts and concerns related to the receptivity of HRs. As such, the items developed, while not intended to be a scale measuring the magnitude of receptivity, do have content validity in that they fall within the domain of considerations related to receptivity (DeVellis & Thorpe, 2021).

Students signed a participation form which indicated that they were engaging in a voluntary action and that the survey was to be administered in an anonymous fashion with no specific identification data requested. The participation form was collected before the questionnaire was administered so that the two documents were not physically linked or attached. No slang or idioms were used. The questionnaire was translated from English to Thai and then translated back by a qualified Thai native speaker to assure accuracy and that no loss in understanding resulted from the translation process (Behling & Law, 2000; Dornyei & Taguchi, 2009). Thais received a Thai-language questionnaire and the foreign MBA students (from outside Thailand) were given a questionnaire in English because the majority were English native speakers or possessed high proficiency in English as a second language. Participants were encouraged to ask questions if they had any confusion as to the instructions. Statistical analyses were conducted on the raw data. These analyses are explained in the next section.

4. Analysis and Results

A principal component analysis (PCA) was conducted on the 15 items included in the survey. The first task was to determine sampling adequacy. The KMO test for sampling adequacy was shown to be .708 which is deemed acceptable (Field, 2009). Items were first checked to determine if there was enough correlation across the items to run the analysis and not so much that multicollinearity would be a problem. This was done by examining their correlation. While correlations were shown across the items, none of the correlations exceeded .6 and the determinant of the R-matrix was .033, which, as recommended by Field (2009), exceeds the .00001 lower limit, indicating no problems with multicollinearity. Bartlett’s test of sphericity $X^2(105) = 694.074, p < .001$ indicating adequate correlation and sufficient relationship among the items to proceed (Field, 2009). Therefore, none of the items were eliminated. A factor analysis using an oblimin rotation method was then conducted to determine the appropriate rotation method for use in this analysis. Examination of the component correlation matrix indicated that there was independence across the factors such that an orthogonal rotation should be employed (Field, 2009). A Varimax rotation was selected. Table 1 shows the factor loadings after rotation. The four-factor solution explained 55.9% of the variance in the data.

Table 1: Summary of Exploratory Factor Loadings for Human Robot Questionnaire (N = 210)

| Item | Rotated Factor Loadings | | | |
|--|-------------------------|-------------------|------------------|----------------|
| | Viewed as Beneficial | Viewed as Friends | Viewed with Fear | Viewed for Sex |
| When available, I intend to buy a HR | .742 | .057 | .024 | .231 |
| I would patronize a business using HRs if HRs resulted in lower prices | .709 | .074 | .096 | .227 |
| HRs will help the economy become more efficient | .702 | .035 | .083 | .148 |
| I believe HRs will be widely accepted by society | .648 | .297 | -.072 | .002 |
| I like that HRs cannot get angry at or abusive of people | .548 | -.179 | .138 | -.095 |
| I believe I can share my emotions with HRs | .162 | .784 | -.006 | .003 |
| An HR can be as good a friend as a human | -.148 | .710 | .056 | .082 |
| HRs may be able to tell right from wrong | .029 | .591 | .321 | .119 |
| I believe I can work well with a HR | .423 | .524 | -.031 | .045 |
| I think HRs may try to control humans | .009 | -.031 | .837 | .047 |
| I think humans might lose control of HRs | .041 | .048 | .815 | -.065 |
| I believe HRs may take my job in the future | .205 | .271 | .617 | -.054 |
| It is OK to have sex with a HR | .144 | -.003 | .026 | .819 |
| I plan to have sex with a HR if possible | .143 | .048 | .116 | .815 |
| People who have sex with a HR are sick | .073 | .151 | -.223 | .605 |

Note: Loadings > .5 in bold

The factor loadings shown in Table 1 indicated four different views or attitudes as expressed by reactions to the items posed. HRs were viewed as: (i) beneficial, (ii) potential friends, (iii) representing fear for what they might do and (iv) potential sex partners. Responses to the four views expressed in the data were then further examined to identify patterns in the data across groupings of respondents resulting in a typology of human attitudes toward HRs. In order to develop this typology, the factors identified in the previous phase of the analysis were examined through a multivariate cluster analysis. The analysis grouped individuals based upon the similarity of their voiced views toward the items that comprised the four factors. A two-step cluster procedure was selected because it produced what Kent, et al. (2014) reported as an excellent ability to detect subgroupings and classify individuals within those subgroupings. The two-step method revealed an average (.3) silhouette measure of cohesion and separation for a four-cluster solution. The factors most important to this solution were ‘Beneficial’ with an importance score of 1.0, followed by ‘Sexual’ with an importance of 0.98, ‘Friends’ with an importance rating of 0.67 and finally ‘Fear’ rated at 0.62. As shown in Table 2, a one-way analysis of variance revealed each cluster to be significantly different on all mean factor scores at the $p < .001$ level.

Table 2: Cluster Centroids (Group Means) for the Four Cluster Solution

| Cluster | Relative Size | Beneficial | Friends | Fears | Sexual |
|-----------|---------------|------------|---------|--------|--------|
| Cluster 1 | 30.0% | -1.0217 | -.4964 | -.3153 | -.1476 |
| Cluster 2 | 27.6% | .4369 | -.4916 | .8533 | .4001 |
| Cluster 3 | 30.5% | .4244 | .7042 | -.1551 | -.7480 |
| Cluster 4 | 11.9% | .4746 | .5886 | -.7880 | 1.3586 |
| | <i>F</i> | 56.12 | 34.54 | 31.39 | 54.64 |
| | p-value | < .001 | < .001 | < .001 | < .001 |

Note: Scores were standardized with higher magnitudes indicating stronger views on the factor

Table 2 also presents the cluster centroids for each of the four factors across the four clusters. Those placed in Cluster 1, the second largest cluster at 30%, could well be termed “Adverse to HRs.” They tended not to view HRs as potentially beneficial. They did not view them as presenting an opportunity for friendship or a sexual relationship, but neither did they show much fear of HRs.

Cluster 2, which might be termed “Hopeful but Afraid,” is the third largest with 27.6% of the respondents. This cluster does view HRs as being potentially beneficial nor does it see them as potential friends. IT exhibits the highest level of fear toward them. Interestingly, the cluster indicated sex with HRs as a strong possibility.

The third cluster, “Welcoming Friends,” is only slightly larger than Cluster 1 with 30.5% of the respondents. This cluster is also hopeful about the benefits that HRs may bring and sees a definite opportunity for friendship. Correspondingly, their fear levels are low, but while they do welcome the opportunity for HR friends, they see this as a platonic relationship.

The final cluster, which might be termed, “Friends with Benefits,” sees the future of HRs as being beneficial, providing the opportunity for relationships with HRs that extend beyond friendship. Not surprisingly, this groups indicated the lowest fear over HRs potential effects on society.

Table 3: Cluster Membership by Demographic Grouping

| Cluster | Gender | | Marital Status | | Age | | | Ethnic | |
|------------|--------|--------|----------------|--------|-------|-------|-------|--------|-------|
| | Male | Female | Married | Single | 21-25 | 26-30 | 31-52 | Thai | Inter |
| Cluster 1 | 18 | 45 | 21 | 42 | 15 | 23 | 25 | 42 | 9 |
| Cluster 2 | 29 | 29 | 16 | 42 | 16 | 20 | 22 | 43 | 24 |
| Cluster 3 | 27 | 37 | 16 | 48 | 26 | 15 | 23 | 49 | 12 |
| Cluster 4 | 13 | 12 | 6 | 19 | 6 | 11 | 8 | 24 | 7 |
| Chi Square | 7.215 | | 1.374 | | 6.923 | | | 6.711 | |
| p-value | .065 | | .712 | | .328 | | | .082 | |

Captured demographic classifications were examined across the four clusters. As shown in Table 3, none of the clusters was significantly different in demographic make-up. However, the Gender and Ethnic groupings were close to significance and may be worth further examination in subsequent studies. It is also worth noting that Cluster 4, termed “Friends with Benefits” did have three times as many single persons as married persons. That may have been an influence on this cluster’s high rating as to their view of potential sexual relations with HRs.

5. Conclusion and Suggestions for Future Research

This study provides two principal contributions. For one, the attitudes of the respondents fell into four distinct groupings. These ranged in a continuum of acceptance from being averse to HRs, to responses of total acceptance including the desire for intimate relations with HRs. Overall, only about 30% of the respondents (Cluster 1) actually oppose the introduction of HRs into the marketplace. While the remaining 70% do vary in how willing they are to accept HRs, they did show that they are receptive. This indicates that once HRs do become available, they may be well received. However, since respondents indicated that they varied in their expectations of what HRs would be able to do in terms of interaction with humans (making friends, sharing emotions, forming intimate relationships) and their effect on business and jobs, there will need to be some major education of the public so that people are not dissatisfied.

Since satisfaction is often conceptualized as a disconfirmation of expectations, unrealistic expectations of what HRs will be able to do could slow the diffusion of this new-to-the-world innovation. The second contribution focuses on the lack of demographic differences in the make-up of the clusters of acceptance. While gender and ethnic background neared statistical significance and therefore warrant further study, age and marital status were not useful discriminators when it comes to acceptance. Since the sample selected for this study consisted of university students, it may be that the ages of the sample did not vary enough (55% 28 or younger) to capture age as a discriminant variable. An understanding of user acceptance of new technology is crucial for business, organizations, and society as a whole in order to remain competitive and innovative in today's rapidly evolving business world. The World Economic Forum (2019) emphasized the necessity for business to adopt and adapt to new technologies in order to survive. The need for employees to comfortably transition toward the use of new technology will dictate an organization's competitive advantage and its long-term success or failure (American Management Association, 2019; DeRue et al., 2012; Khanna, Palepu, & Sinha, 2005).

This study has served as a pioneering attempt to learn about HR acceptance and in doing so has pointed out several areas for future study. First, since significant differences were found between the clusters of acceptance even among persons with much in common as university students, this study should be replicated using a sample more representative of the population at large. Greater variance in the sample's characteristics may reveal acceptance clusters that more closely represent how HRs will be accepted by the public at large. Additionally, other variables should be included to further define the characteristics of the individuals that make up each cluster. Education level, occupation, innovativeness, income and personality type might likely prove to be discriminant variables that might vary across clusters.

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An Investigation of Customer Acceptance of Food Delivery Systems

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Abstract

This quantitative research study focuses on platform-to-consumer internet-based food delivery systems (FDS), which unlike full-service companies that exclusively serve their own food, enables consumers to compare the multiple providers registered in the platform. Specifically, it aims to identify the factors that may affect the use of FDS. It combines various constructs from well-known theoretical models of technology adoption (TPB, TAM, and UTAUT) with FDS-specific aspects. Age, income, gender, and experience were hypothesized as FDS-use moderators. 400 FDS-experienced Bangkok- and metropolitan-based volunteers participated in this study. Structural equation modeling was used to analyze the theoretical model. The results show that out of the thirteen model variables hypothesized in this study, Relative Advantage influences intention to use the most, followed by Mobility, Complexity, Product Information, Self-Efficacy, Promotion, Facilitating Conditions, Observability, Triality, Compatibility, Social Influence, and Delivery Cost. Among the constructs hypothesized to moderate the model variables, gender was found to moderate Self-Efficacy and Compatibility, experience to moderate Relative Advantage, and income to moderate Complexity. These findings suggest new theoretical model constructions, which could benefit FDS providers, Food suppliers, FDS users, software vendors, and any other FDS stakeholders.

Keywords: Food Delivery Systems, Customer Acceptance, Relative Advantage, Moderators.

1. Introduction

Today, restaurant-to-consumer and platform-to-consumer internet food delivery services (hereinafter referred to as 'FDS') abound (Poluliakh, 2020). Some, such as, for example, even-Eleven, Pizza Works, Pizza Hut, Dominos, KFC, and McDonald's, offer full-service delivery. These full-service companies, however, exclusively serve their own food, unlike platform-to-consumer food delivery that enables customers to compare items, pricing, reviews, ratings, and promotions from multiple providers registered in the platform. This study focuses on FDS via Lineman, Grab, Foodpanda, and Robinhood in Bangkok, Thailand, where typically, an aggregator sends orders to restaurants when consumers confirm them. Riders then deliver meals from the eatery. FDS has grown fast in terms of popularity and consumer expectations, most notably in Thailand (Wichiantanon, 2020). According to Kasikorn Research Center (2020), in 2019, the Thai food delivery business recorded a 14% year-on-year growth. And according to Euromonitor International (2020), during the period 2014-2019, the share of online orders to total food-service sales worldwide almost tripled, jumping from 2.6% in 2014 to 6.9% in 2019. Moreover, FDS is widely available with little time and place restrictions (Choi, 2020; Galivan et al., 2021; Siswantara & Muthmainnah, 2020).

It is the author's view that research on FDS is limited and essentially based on the Technology Acceptance Model (TAM) initially developed by Davis in 1989. David's (1989) study increases understanding of FDS in three ways. One way is the development and evaluation of a new theoretical model based on a broad perspective that includes other theoretical approaches to technology adoption, most notably, Ajzen's (1985) Theory of Planned Behavior (TPB) (Troise et al., 2021), Ajzen and Fishbein's (1975) Theory of Reasoned

Action (TRA), and Bankatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology (UTAUT). Another way is the inclusion of factors specific to FDS (Venkatesh et al., 2003). A third way is the investigation of moderators, such as gender, age, experience, and income, as factors moderating the influence of other factors on an individual (Lisana, 2021).

This study addresses three specific research questions:

- Which factors significantly affect an individual's intention to use FDS?
- Does an individual's experience with FDS, age, income, or gender have a moderating effect on their intention to use FDS?
- What are the theoretical and practical implications of the findings?

Its findings: contribute to the limited theoretical understanding of FDS adoption, especially in the context of Thailand, and have practical implications for a wide variety of interests related to FDS (e.g., developers of technical aspects of FDS, food providers, delivery services, marketing and promotion of FDS, associated payment systems, and consumers).

2. Related Literature and Theoretical Models

- Overview of Previous Studies

Table 1 lists the relevant characteristics of FDS-related studies. They are grouped into two categories. While theoretical models and conceptual development studies are shown as explanatory studies, other studies are reported as exploratory studies as they are theoretically untested.

Table 1: Overview of FDS-Related Studies

| Project Focus | Reference |
|---|--|
| Explanatory Studies | |
| Effects on the adoption of a system resulting from the availability and observability of the system. | Siswantara & Muthmainnah (2020) |
| Marketing mix as the toolkit of transaction marketing and archetype for operational marketing planning Quo vadis, marketing? Toward a relationship marketing paradigm. | Grönroos (1994). |
| Impact of mobility on intentions to use m-payment services. | Anthony & Mutalemwa (2014). |
| Effects of the extent to which an innovation provides an advantage relative to ideas it supersedes. | Alshamaila, Papagiannidis, & Li (2013); Lin & Chen (2012); Low, Chen, & Wu (2011); Wu (2011). |
| Extent to which users perceive an application as a sum of its features. | Harrison & Datta, 2007 |
| Studies of the use of TAM for explaining and predicting intentions and usage behavior. | Davis, 1989; Marangunić & Granić, 2015; Venkatesh & Davis, 2000; Zhang, Zhu, & Liu (2012). |
| Assessment of models studying influences on the intention to use a system. | Davis, 1989 |
| Influence of user satisfaction on intention to adopt FDS. | Selim, 2007 |
| Degree to which an innovation may allow individuals to "try and buy." | Wahid & Iswari, 2007 |
| Exploratory Studies | |
| Social influences on a consumer's decision to adopt and use FDS. | Venkatesh et al., 2003 |
| The relationship between compatibility and intention to use in previous FDS studies. | Dass & Pal (2011); Kapoor, Dwivedi, & Williams (2015); Schierz, Schilke, & Wirtz (2010); Yang et al. (2012); Zhang et al. (2012) |

| | |
|---|--|
| FDS adoption is influenced by having no restriction on the time and place FDS may be used. | Mallat et al., 2008 (Mallat & Tuunainen, 2008) |
| Influence of the personal usefulness of a food delivery system on the behavioral intention to use the system. | Hamza, 2014; Kim, Mirusmonov, & Lee, 2010; Tobbin & Kuwornu, 2011; Zarm pou et al., 2012 |
| FDS adoption is influenced by the amount of effort required to use the system. | Kim et al., 2010 |

Note: In their study, Siswantara & Muthmainnah (2020) used literature review as data collection method. For all the other studies mentioned above, a questionnaire was utilized.

Based on a review of previous studies, the following comments relate to existing theoretical models and specific features used to research FDS:

- Theoretical Models

Many research studies use the Technology Acceptance Model (TAM) developed by Davis in 1989 (e.g. Alagoz & Hekimoglu, 2012; Maranguni & Grani, 2015; Venkatesh & Davis, 2000; Zhang et al., 2012). Using the TAM to examine smartphone meal ordering intentions, Okumus and Bilgihan (2014) determined that perceived usefulness, self-efficacy, enjoyment, social norms, and convenience were important factors. Hwang and Kim (2019) applied the TPB to explore customers' views on FDS's environmental benefits using unmanned aerial vehicles and Quevedo-Silva et al. (2016) to examine online food purchases. In their study of mobile apps and word-of-mouth in meal delivery, Belanche, Flavián, and Pérez-Rueda (2020) stressed Customer Lifestyle Compatibility, Planned Behavior, and Perceived Security. The TPB has been extensively used to study popular mobile meal delivery apps that let customers contact restaurants, look for meals, order delivery, and pay without interacting with restaurant staff (Alalwan, 2020; Okumus & Bilgihan, 2014; Wang, Ou, & Chen, 2019). Okumus et al. (2018) examined mobile diet app users' intentions using the UTAUT and found that performance expectations, effort expectations, social influence, facilitating conditions, and personal ingenuity affect users' intentions. Barrane, Karuranga, and Poulin (2018) also relied on the UTAUT to study e-commerce innovation as did Chhonker et al. (2018) to construct a new mobile commerce model and Capistrano (2021) to study trust in FDS and e-commerce acceptability. Izzati (2020) suggested utilizing the UTAUT to study online FDS incentives.

- FDS Specific Features

It was found that accessibility and mobile payment services affect FDS adoption (Anthony & Mutalemwa, 2014). It has also been found that FDS adoption can be influenced by product/service marketing (information, price, service, and promotion) (Grönroos, 1994), "try-and-buy" opportunity (Wahid & Iswari, 2007); social influence (Venkatesh et al., 2003); innovation (Alshamaila et al., 2013; Lin & Chen, 2012; Low et al., 2011; Wu, 2011); system features (Harrison & Datta, 2007); and compatibility (Dass & Pal, 2011; Kapoor et al., 2015; Schierz et al., 2010; Yang et al., 2012; Zhang et al., 2012). Elements from the existing models discussed above and features of FDS have been incorporated into the theoretical model developed for this study.

- Model Variables and Hypotheses

The variables and associated hypotheses discussed in this sub-section are derived from a review of the previous studies listed in Table 1 above:

- Relative Advantage

Relative advantage implies that the latest innovation is better than its predecessors. If no gain is perceived, customers will use the current technology. But they will adopt the invention if they perceive a relative benefit. Cloud computing adoption studies show that relative advantage matters (Alshamaila et al., 2013; Low et al., 2011; Wu, 2011). In relation to FDS, it can therefore be hypothesized that:

H1: *Relative advantage has a significant positive direct effect on intention to use.*

- *Complexity*

Complexity refers to how hard an innovation is to grasp and use. High complexity hinders adoption. This concept matches the TAM measure Perceived Ease of Use and has been employed in technology adoption research (Jasperson, Carter, & Zmud, 2005; Harrison & Datta, 2007). In relation to FDS, it can thus be hypothesized that:

H2: *Complexity has a significant negative direct effect on intention to use.*

- *Compatibility*

Compatibility shows how well an innovation matches prospective users' values, requirements, and experiences (Rogers, 1983). FDS (Dass & Pal, 2011; Kapoor et al., 2015; Schmerz et al., 2010; Yang et al., 2012; Zhang et al., 2012). Moreover, several other technology adoption studies have shown a positive correlation between compatibility and intention to use (Harrison & Datta, 2007; Tobin & Kuwornu, 2011; Zampou et al., 2012; Hamza, 2014). In relation to FDS, the following hypothesis can thus be developed:

H3: *Compatibility has a significant positive direct effect on intention to use.*

- *Observability*

Observability indicates how visible innovation's results are (Siswantara et al., 2020). Experience increases confidence in an innovation's acceptance. Siswantara & Muthmainnah (2020) argued that the widespread availability and observability of novel cloud-based note-taking tools will boost their adoption. In relation to FDS, it can therefore be hypothesized that:

H4: *Observability has a significant positive direct effect on intention to use.*

- *Triality*

Triality refers to how much an idea may be "tried and bought." If an idea can be tested and fits needs, people are more inclined to adopt it. However, unsuccessful trial results can lead to invention rejection (Wahid & Iswari, 2007). In relation to FDS, it can be hypothesized that:

H5: *Triality has a significant positive direct effect on intention to use*

- *Mobility*

Mobility means freedom in time, location, and FDS access (Mallat et al., 2008). It refers to the use of various mobile devices to access mobile phone services and complete transactions anywhere within a mobile network territory (Kim et al., 2010). Mobility and FDS utility have been linked in a Korean (Kim et al., 2010). A study in Tanzania, however, found that mobility was negatively correlated with FDS use intentions (Anthony & Mutalemwa, 2014). In relation to FDS, the following hypothesis has been developed:

H6: *Mobility has a significant positive direct effect on intention to use.*

- *Facilitating Conditions*

Facilitating conditions refer to a user's expectation that elements and resources that will facilitate their use of a system will be readily accessible (Venkatesh et al., 2003). Previous research has established a significant positive correlation between Facilitating Conditions and Intention to Use (Chiu & Wang, 2008; Cho, Cheng, & Lai, 2009; Rahmat & Au, 2013). In relation to FDS, it is therefore hypothesized that:

H7: *Facilitating conditions have a significant positive direct effect on intention to use.*

- *Social Influence*

Social influence refers to the way others influence consumers to use FDS. Typically, they are relatives, friends, or coworkers (Venkatesh et al., 2003). Subjective norms, an individual's assessment of whether others in their immediate social circle think the activity should be done, has been studied (Ajzen, 2020) and found to increase perceived utility (Venkatesh & Davis, 2000) and behavioral intention to utilize FDS in China, Nigeria, and Tanzania (Yang et al., 2012; Chachage, Kamuzora, & Malima, 2013; Tossy, 2014). Consumers are more inclined to

utilize FDS if others do (Hamza, 2014; Murendo et al., 2015). In relation to FDS, the following hypotheses can be developed:

H8: *Social influence has a significant positive direct effect on intention to use.*

- *Product Information*

Production information refers to everything that can be sold to a market to satisfy a need or want (Kotler et al., 2018). In e-commerce marketing, information is a product. Lee et al. (2017) categorized information into user-generated and firm-generated types. Product ideas can also be shared online. Businesses can gather consumer data directly from consumers to create better products. This lets international companies tailor their products to local markets (Quelch & Klein, 1996) or establish new ones. Businesses can also sell advertising during transactions (Ghosh, 1998). Consequently, in relation to FDS, it can be hypothesized that:

H9: *Product information has a significant positive direct effect on intention to use.*

- *Delivery Cost*

Delivery cost consumer pricing information. According to Kotler et al. (2018), all corporate processes are expenditures. Internet competition will standardize prices. Quelch and Klein (1996) identify two conflicting Internet price effects. First, the technology can be used to charge consumers in different countries different prices. If nothing is done, purchasers may quickly notice the price difference and object. Quelch and Klein (1996) believed these traits would enhance worldwide pricing homogeneity. Internet sales require new pricing approaches. Rayport and Sviokla (1994) noted that technology's ability to cut prices will make it hard for customers to set prices. According to Elvandari, Sukartiko, and Nugrahini (2018), consumers need an affordable delivery cost. In relation to FDS, the following hypothesis can thus be developed:

H10: *Delivery cost has a significant positive direct effect on intention to use.*

- *Service*

Companies can now communicate with clients online and keep improving the service quality (Sealy, 1999). Service that exceeds customer expectations encourages positive customer behavior as internet product reviews replace TV advertising. research, sales, promotions, coupon distribution and make customer support possible. (Aryani et al., 2022). In relation to FDS, it can be hypothesized that:

H11: *Service has a significant positive direct effect on intention to use.*

- *Promotion*

Promotion can be defined as a company's efforts to promote its products and attract customers (Kotler (2003). Incumbent merchants and manufacturers can offer consumers a wealth of information. Moreover, today, data mining enables companies to create consumer profiles for personalized promotions. This advantage is greatest when the consumer wants detailed product information or the product is represented as cutting-edge (Kotler et al., 2018). Brands that link their products to emotions, associations, and memories will likely do better than those that focus on product features (Evans & Wurster, 1999). 46% of new internet customers choose to buy from offline merchants. 34% of repeat internet shoppers picked well-known offline retailer websites (Kane, 1999). According to Quelch and Klein (1996), new users look for well-known brands first. Ray et al. (2019) noted that the customer experience provided by FDS is contingent on offers, coupons, cashback and discounts, loyalty programs, and referral incentives. These advantages are also referred to as customer engagement programs. In relation to FDS, the following hypothesis can therefore be developed:

H12: *Promotion has a significant positive direct effect on intention to use.*

- *Self-Efficacy*

Self-efficacy has been associated with a wide variety of human actions (Rollnick & Heather, 1982; Yang et al., 2012) and has been defined as a belief that one possesses the necessary skills for a particular behavior (Schwarzer & Fuchs, 1995). It has been shown to influence how individuals think, feel, and act (Elango, Dowpiset, & Chantawaranurak, 2018). In relation to an FDS, the following hypothesis can thus be developed:

H13: *Self-efficacy has a significant positive direct effect on intention to use.*

- *Moderators*

Many technology adoption studies (e.g. Venkatesh et al., 2003; Francioni et al., 2022) have determined that four respondent characteristics, namely, gender, age, experience, and income, have a direct impact on the other constructs, including user intention to avail themselves of the system. These four constructs are therefore hypothesized in this study to moderate each of the 13 variables discussed above that have a direct impact on Intention to Use (Hypotheses H1-H13). UTAUT supports gender, age, and experience moderating effects (Venkatesh et al., 2003). As can be seen in Table 2, there is a large body of online system research showing that gender, age, experience, and wealth moderate the direct impacts of social influence, self-efficacy, complexity, compatibility, and facilitating factors on intention (Lisana, 2021). It is important to note, though, that there are very few studies on moderating effects in the context of FDS. This is precisely why the following hypotheses are regarded as exploratory. However, they represent one of the main contributions of this study:

H14-17: *Gender (H14), Age (H15), Experience (H16), and Income (H17), each have a significant moderating impact on the direct effect of each of the variables hypothesized in H1-H13 on intention to use.*

Table 2: Studies Supporting Moderating Effects

| Variable with Direct Effect on Intention | Moderator | | | |
|--|--|---|---|--------------------|
| | Gender | Age | Experience | Income |
| Social Influence | Hamza & Shah (2014), Musa, Khan, & AlShare (2015), Wong, Leong, & Puah (2020). | Eze & Poong (2013), Musa et al. (2015), Shin (2009), Sobti (2019) | Giovanis et al. (2019), Yunpeng & Jamal (2018) | Eze & Poong (2013) |
| Self-Efficacy | - | Shin (2009) | - | - |
| Complexity | Hamza & Shah (2014), Wong et al. (2020) | Alsswey & Al-Samarraie (2020), Sobti (2019), Zhu et al. (2018) | - | - |
| Compatibility | Bao, Chen, & Guo (2013), Giovanis et al. (2019), Kalinić et al. (2019), Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva (2014a), Liébana-Cabanillas et al. (2018), Yunpeng & Jamal (2018) | Alsswey & Al-Samarraie (2020), Eze & Poong (2013), Giovanis et al. (2019), Musa et al. (2015) | Giovanis et al. (2019), Liébana-Cabanillas et al. (2014b), Musa et al. (2015), Yunpeng & Jamal (2018) | Eze & Poong (2013) |
| Facilitating Conditions | Lee, Lee, & Rha (2019) | Sobti (2019), Yunpeng & Jamal (2018) | - | - |

Source: Lisana (2021)

- Theoretical Model

Figure 1 presents the theoretical model, which shows the hypothesized direct and moderating effects discussed above. Groups are used to represent the nature of the variables.

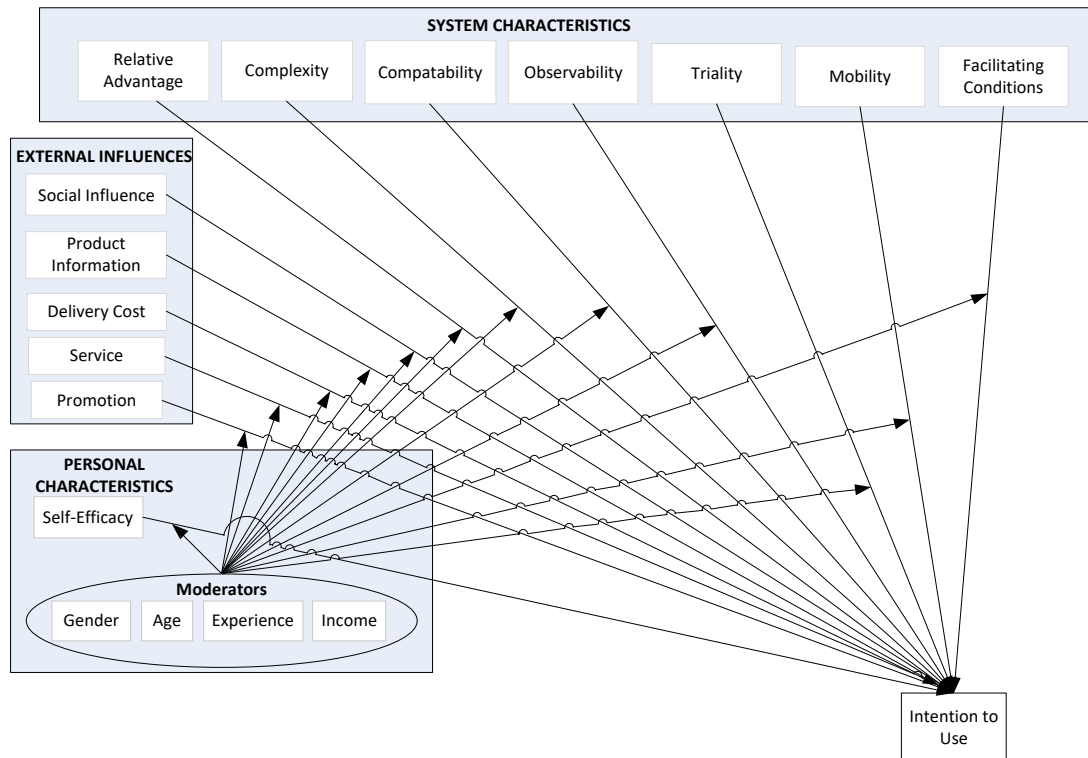


Figure 1: Theoretical Model (created by the author for this study).

3. Methodology

This quantitative cross-sectional study used a questionnaire to examine FDS and address the research questions. A Thai-English self-administered questionnaire was created based on Neuman's (2006) design guidelines and evaluated by a focus group of five qualified individuals. It includes three sections. Section 1 contains participant instructions, Section 2 records the respondents' gender, age, education, occupation, and monthly income; and Section 3 examines the theoretical model's variables. In order to increase the validity and reliability of the measurements of the variables, various measuring tools were used as shown in Tab

Table 3: Measurement of Variables

| Variable | Indicator | Existing Measuring Instrument |
|-----------------------------|-----------|---|
| Relative Advantage (RA) | RA1 – 4 | Mandari et al. (2017) |
| Complexity (CPX) | CPX1 – 3 | Kim et al. (2010) |
| Compatibility (C) | C1 – 3 | Hamza (2014) |
| Observability (O) | O1 – 3 | Siswantara & Muthmainnah (2020) |
| Triality (TRI) | TRI1 – 3 | Wahid & Iswari (2007) |
| Mobility (M) | M1 – 3 | Kim et al. (2010) |
| Facilitating Condition (FC) | FC1 – 5 | Venkatesh et al. (2003) |
| Social Influence (SI) | SI1- 3 | Al Mansoori, Sarabdeen, & Tchantchane (2018) |
| Product Information (PI) | PI1- 5 | Venkatesh et al. (2003) |
| Delivery Cost (DC) | PP1- 3 | Quelch & Klein (1996) |
| Service (PS) | PS1- 3 | Quelch & Klein (1996) |
| Promotion (PPR) | PPR1- 7 | Sealy (1999) |
| Self-Efficacy (SE) | SE1- 5 | Saxena, 2018 |
| Intention to Use (IU) | IU1 - 7 | Susanto & Aljoza, 2015; DeLone & McLean, 2003 |

In this table, each variable is a latent variable with its indicator measured on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The Age, Experience, and Income moderators are ordinal level measures and the Gender moderator nominal level. The target population in this study were Internet-connected 19-to-54-year-old Bangkok residents who have had FDS experience. Given these criteria, the desired population may well surpass 100,000. Based on 5% precision and 95% confidence, 400 was the required sample size (Israel, 2003). This sample size ensured the study's statistical validity. Because there was no sampling frame, Google Forms were used to distribute the surveys to the target population using a purposive sample method. The researcher's connections helped as well.

4. Data Preparation and Analyses

The initial sample consisted of 428 responses. Data entry accuracy in an SPSS worksheet was tested using 43 random surveys (10 percent). There was no error. However, ten surveys had missing values and had to be removed from the sample. Outlier screening excluded another 18 surveys, leaving 400 questionnaires in total. A Principal Component Factor analysis was conducted to assess the latent variable construct validity. PS1-3, Observability, and Delivery Cost indicators showed high cross-loadings in the original analysis. To fix, service was deleted. Indicators loaded strongly into only their latent variable with loadings of 0.4 or more and eigenvalues of at least 1. The remaining latent variables had loadings of 0.4 or larger and eigenvalues of 1. (Straub et al., 2004). Cronbach Alpha coefficients assessed indication reliability. Each coefficient exceeded the 0.7 threshold (George & Mallery, 2003). Descriptive statistics for model variables (mean, variance, skewness, kurtosis) show skewness and kurtosis less than 3 and 7, respectively. Thus, an SEM analysis with maximum likelihood estimation is appropriate (Kline, 2016). Grab leads the FDS market, followed by Lineman, Robinhood, and Food Panda. Participants in the survey have diverse employment. Housewives (36%), however, dominate. 58% of the respondents have a master's or doctorate degree, and 98% a bachelor's degree. Table 4 shows the proposed groups within each moderator that were used in the SEM analyses of the moderator effects and the bases for the selection of these groups.

Table 4: Proposed Moderator Groups

| Moderator | Group 1 | Group 2 | Basis for Groups |
|------------|---|---|--|
| Gender | Males (187) | Females (213) | Frequency distribution for Gender |
| Age | 19-38 years Generation Y (220) | 39-54 years Generation X (180) | These two groups are reported in the literature to be the dominant users of FDS. |
| Experience | Use FDS 10 times per week or less (229) | Use FDS 11 times per week or more (171) | The median of the distribution |
| Income | 50,000 Baht per month or less (200) | More than 50,000 Baht per month (200) | The median of the distribution |

T-tests, with $p < 0.05$, showed that:

(a) For each moderator group, the mean values for all the model variables, except for Complexity, are significantly greater than the *neutral* value of 4 on the 7-point measurement scale. For all groups, the means for Complexity are significantly less than the *neutral* value of 4. This indicates that for all groups, all of the model variables are highly relevant to the use of FDS.

(b) For males, Generation Y, and more frequent users of FDS, Triality is significantly less important than for the other group.

(c) Promotion, Self-Efficacy, and Intention to Use are significantly less important to males than females.

(d) For Generation Y Self-Efficacy, Intention to Use, and Delivery Cost are significantly less important than for Generation X.

(e) Less frequent users of FDS place significantly more importance on Promotion compared to more frequent users.

(f) Those with lower incomes find FDS to be significantly less complex than those with higher incomes.

Table 5 shows the correlations among the model variables. Statistically significant coefficients ($p < 0.05$) are in bold type.

Table 5: Correlations

| Variable | RA | CPX | CI | OI | TRI | M | FC | SI | PI | DC | PPR | SE |
|------------------------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Relative Advantage (RA) | 1 | | | | | | | | | | | |
| Complexity (CPX) | -.211 | 1 | | | | | | | | | | |
| Compatibility (CI) | .011 | -.104 | 1 | | | | | | | | | |
| Observability (OI) | .250 | -.430 | .177 | 1 | | | | | | | | |
| Triality (TRI) | .144 | -.384 | .239 | .439 | 1 | | | | | | | |
| Mobility (M) | .225 | -.272 | .198 | .405 | .348 | 1 | | | | | | |
| Facilitating Conditions (FC) | .169 | -.217 | .063 | .373 | .391 | .233 | 1 | | | | | |
| Social Influence (SI) | .012 | -.196 | .111 | .147 | .121 | .080 | .060 | 1 | | | | |
| Product Information (PI) | .021 | .029 | .256 | .079 | .160 | .166 | .040 | .127 | 1 | | | |
| Delivery Cost (DC) | .241 | .401 | .208 | .515 | .467 | .414 | .374 | .277 | .204 | 1 | | |
| Promotion (PPR) | .263 | -.440 | .160 | .595 | .366 | .350 | .370 | .186 | .007 | .498 | 1 | |
| Self-Efficacy (SE) | .153 | -.224 | .077 | .279 | .237 | .203 | .167 | .082 | .027 | .363 | .356 | 1 |
| Intention to Use (IU) | .396 | -.294 | .028 | .123 | .047 | .265 | .356 | .066 | .304 | .030 | .217 | .267 |

From the last row in Table 5, it can be seen that the correlations between Intention to Use and four of the model variables (Compatibility, Triality, Social Influence, and Delivery Cost) are not statistically significant. However, all the other correlations with Intention to Use are statistically significant. Most of the model variables are significantly correlated with each other.

5. Model Analyses

Amos software was used to analyze SEMs. This format displays all effects. The unstandardized effect is shown first, followed by *, **, ***, or NS, indicating that the statistical significance is 0.05, 0.01, 0.001, or not statistically significant at 0.05 or less. The standardized effect is shown in parentheses, followed by an interpretation of its magnitude: Small (S, ≤ 0.1), Medium (M, between 0.1 and 0.5), or Large (L, ≥ 0.5) (Cohen et al., 2013). Figure 2 shows the direct effects in the SEM analysis of the model.

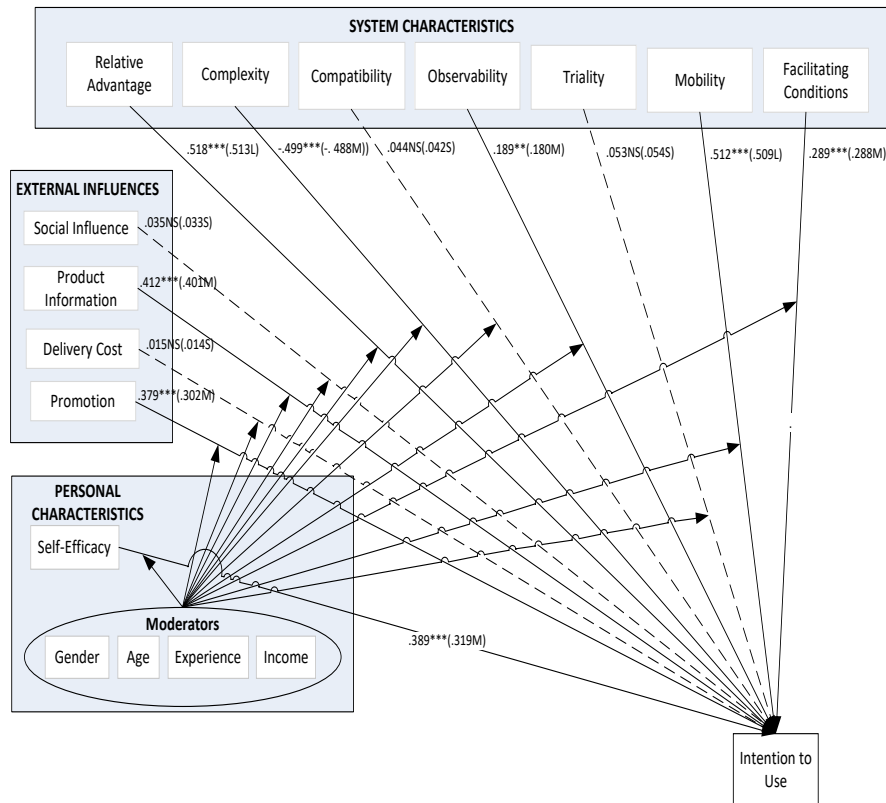


Figure 2: Direct Effects in the Model (created by the author for this study)

Following Kline (2016), the fit statistics for the modified theoretical model are $\chi^2 = 2215.660$, $df = 1299$, $NC = \chi^2/df = 1.706$, $RMR = 0.024$, $GFI = 0.916$, $AGFI = 0.901$, $NFI = 0.915$, $IFI = 0.925$, $CFI = 0.924$, and $RMSEA = 0.042$. The fit statistics are a clear indication of a good fit between the data and the model. If any or all of the three small effects (dashed lines) are deleted, then the improvements in the fit statistics are negligible, and so the model in Figure 2 is accepted as a final satisfactory model where 80 percent of the variance in Intention to Use is explained by the 12 variables affecting it. Table 6 presents details of the only six significant moderator effects ($p < 0.05$).

Table 6: Significant Moderator Effects

| Unstandardized Effect on Intention to Use | | Difference | Magnitude of the Critical Ratio for the Difference |
|---|-------------------------|-------------------------|--|
| Gender | | | |
| | Males | Females | |
| Facilitating Conditions | .105 NS | .389*** | -.284 2.61** |
| Self-Efficacy | .115** | .394*** | -.280 2.59** |
| Age | | | |
| | Generation Y | Generation X | |
| Compatibility | .013NS | .189** | -.176 2.10* |
| Self-Efficacy | .106** | .401*** | -.295 2.67** |
| Experience | | | |
| | ≤ 10 times per week | ≥ 11 times per week | |
| Relative Advantage | .528*** | .311*** | .217 2.50* |
| Income | | | |
| | ≤ 50,000 Baht per month | > 50,000 Baht per month | |
| Complexity | -.301** | -.512*** | .211 2.31* |

In Table 6, considering effects on Intention to Use, the effect is significantly stronger for:

- (a) Females than males for Facilitating Conditions and Self-Efficacy;
- (b) Generation X than Generation Y for Compatibility and Self-Efficacy;
- (c) Those with less experience than those with more experience for Relative Advantage;
- (d) Those with higher incomes than those with lower incomes form Complexity.

6. Discussion and Conclusion

The characteristics of the 400 participants showed that they were suited to participate in the study. The results are first discussed from a theoretical perspective and then from a practical one.

- *From a Theoretical Perspective:*

- (a) Hypothesis H11 about Service could not be tested because the measures of Service were not valid and instead measured parts of Observability and Delivery Costs. Among the other 12 hypotheses on significant effects on Intention to Use, only four (Compatibility, Triality, Social Influence, and Delivery Cost) were not supported. This represents considerable consistency with the limited number of relevant previous studies (Hamza, 2014; Wahid & Iswari, 2007; Tobbin & Kuwornu, 2011; Quelch & Klein, 1996). As to the hypotheses that were supported, the significant effects on Intention to Use were in decreasing order of magnitude due to Relative Advantage and Mobility (both large), Complexity, Product Information, Self-Efficacy, Promotion, Facilitating Conditions, Observability (all medium), Triality, Compatibility, Social Influence, and Delivery Cost (all small).
- (b) As shown in Table 6, only six of the 48 hypothesized moderator effects were supported. Four of these hypothesized moderator effects were exploratory in nature. They involved Gender, Age, Experience, and Income and represent an essential contribution and a strong motivation for further studies on moderator effects in relation to FDS.

- *From a Practical Perspective:*

Table 7 sets a hierarchy of eight actions listed in decreasing order of their influence on the objective of increasing one’s intention to use FDS. This hierarchy does not include small effects. Based on the analyses of moderator effects, target groups for these actions are suggested.

Table 7: A Hierarchy of Practical Actions to Increase Intention to Use

| Action | Associated Model Variable | Target Group |
|---|----------------------------------|---------------------------|
| Ensure that: | | |
| 1. Continued development of features that make FDS superior to other means of obtaining food. | Relative Advantage | Frequent FDS users |
| 2. Future developments in mobile technologies continue to provide excellent access to FDS. | Mobility | All users |
| 3. FDS are easy to use. | Complexity | Those with higher incomes |
| 4. Product and service information is available in clear form. | Product Information | All users |
| 5. Users feel confident about their abilities to use FDS. | Self-Efficacy | Males and Generation Y |
| 6. FDS is promoted strongly among users. | Promotion | All users |
| 7. Users believe that infrastructure exists to support their use of FDS. | Facilitating Conditions | Males |
| 8. Users are aware of innovations to FDS. | Observability | All users |

In practice, the actions in Table 7 need to be decomposed further to develop plans specific to each particular FDS. For each action, there should be:

- (a) Statistical information about the number of customers who are using the FDS.
- (b) Comparative information about the costs of food items and delivery times from offline vendors, other online vendors, or the home preparation of food.
- (c) Comparative information about the main FDS user groups.
- (d) Testimonials from users, especially frequent FDS user groups, highlighting the advantages of using FDS and the factors that positively affect FDS usage so that FDS providers can adapt the interface of the FDS application to attract more users.
- (e) An advancement of mobile technologies that gives more people access to FDS applications and helps to reduce the complexity of FDS applications, gaining more users and attracting the intended target group in the process.
- (f) Relevant information provided to users, such as product, service, and promotional information. Providers can also integrate promotion campaigns into FDS applications and create easy-to-use applications without users having to find information about promotions elsewhere and add complications when trying to apply for the sales/promotional campaign.
- (g) An advancement in technology of FDS applications, an adjustment by providers of statistical data and feedback from users, a better infrastructure to support the use of the selected FDS applications, and an empowerment of customers to imbue them with confidence in their ability to use the applications. This will cause users to adopt the more stable, and easy-to-use applications, those providing well-rounded services.

Obviously, updated information on services, products, payment methods, and improved communication methods should be made clear to customers to ensure that users are kept aware of innovations in FDS applications. In conclusion, this study has contributed to enhancing the understanding of FDS by: (i) filling a gap in the literature on FDS, particularly in the context of Thailand; (ii) developing and evaluating a new theoretical model derived from previous studies in order to explain an individual's intentions to use a particular FDS; (iii) evaluating the moderating effects of gender, age, income, and experience and how they may directly influence one's intention to use FDS; and (v) reporting the practical implications of the findings.

- Suggestions for Further Studies

Naturally, this study has limitations. For one, it would be erroneous to claim that all the possible constructs related to intention and FDS have been included in this new theoretical model. This is the case in particular with the validity of the measurement of Service, which, as a model construct, requires further investigation. Moreover, since the findings related to moderator effects are considered to be exploratory in nature, future studies should be conducted for further validation. In addition, a repetition of this study is recommended to enhance external validity.

The new findings should also be the subject of future studies. Further evaluation should include the following:

- (a) A new theoretical model derived from existing theory is developed and evaluated.
- (b) The effects of Compatibility, Triality, Social Influence, and Delivery Cost on Intention to Use FDS are small and not statistically significant. Also, none of these four variables has a statistically significant correlation with Intention to Use. These findings are different from those reported in several previous studies.
- (c) There are significant correlations between Intention to Use and 12 of the hypothesized variables for which a significant effect on Intention to Use was supported. In previous studies, these correlations were rarely reported or discussed.
- (d) The findings for moderator effects, significant or otherwise, are considered to be new findings. They begin to address the lack of thorough study of moderators in relation to FDS;

- (e) The measures of Service, derived from Quelch and Klein (1996), failed to exhibit satisfactory construct validity. Future studies should address this problem.

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CAPE Ratio as a Prediction Tool for the Stock Exchange of Thailand (SET)

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Abstract

This study investigates predictability of the Cyclically Adjusted Price-Earning (CAPE) ratio (or Shiller PE ratio) on the returns of the Stock Exchange of Thailand (SET), currently the second largest capital market in South-East Asia. Most empirical research studies on the CAPE ratio performance focus on the U.S. equity market and very few on the Thai capital market; hence this research study. Using regression models and cointegration analyses, this paper examines the ability of the CAPE ratio to forecast returns as compared to the ability of the price-earnings ratio and the book-to-value ratio, respectively. The regression estimation shows no significant relationship between the CAPE ratio and the real future returns on the SET. The cointegration analysis, however, reveals a significant long-term cointegration relation between the ratio and the returns on the SET. Among the three ratios considered in the study, the price-earnings ratio is the only one that has a significant relationship with the returns in the regression model. All three ratios show a significant cointegration relation with SETs returns.

Keywords: Shiller PE, Cyclically Adjusted PE, CAPE ratio, The Stock Exchange of Thailand.

1. Introduction

Since the inception of capital markets as a source of funding and investment opportunities for investors, there have been a number of studies seeking to understand the behavior of stock prices (Waser, 2021; Keimling, 2016; Hodge, 2011; Khan, 2009; Ang, Bekaert, & Liu, 2005; Bierman, 2002; Harasy & Roulet, 2000; Campbell & Shiller, 1988; Lamont, 1998; Ding, Granger, & Engle, 1993). Economists and academics have long sought to come up with tools capable of predicting stock prices and market indices. As a result, security valuation tools used for capital markets have evolved continually to effectively evaluate the intrinsic value of securities as compared with market prices. Among these valuation tools, two approaches have been widely adopted for securities valuation: the discounted cash flow method and the relative valuation method. The discounted cash flows method adjusts the cash flows received from securities investment to their present value. This method requires a prediction of future cash flows and an appropriate discount rate. As to the valuation of securities by a relative method, it compares the price of securities with variables that show their ability to operate in the market at that time. These variables range from sales, book values, to earnings, and profits. One of the most widely used approaches among these relative valuation methods is the price-earnings (hereinafter referred to as the 'P/E ratio') (Bierman, 2002; Rahman & Shamsuddin, 2019). The P/E ratio owes its wide use to its simplicity both in terms of calculation and interpretation. It

can be applied to both individual stocks and stock indices. In 1998, John Y. Campbell, an assistant professor at Princeton university, and Robert J. Shiller, a lecturer at Yale University and 2013 Nobel Prize winner in Economics, introduced the Cyclically Adjusted Price-to-Earnings ratio (hereinafter referred to as the 'CAPE ratio' or 'CAPE'). Also commonly known as the Shiller P/E or PE10, the CAPE ratio is based on the notion that short-term earnings are highly susceptible to economic cycles and stock returns are mean reversion. According to Campbell and Shiller (1988, 2001), the CAPE ratio mitigates short-term instability in security returns by replacing one-year earnings in P/E with a ten-year average earning value. Since then, the CAPE application has been extensively employed to predict over- and undervaluation in stock markets (Raju, 2022; Lechner, 2021; Waser, 2021; Clare et al., 2017; Jivraj & Shiller 2017; Bunn & Shiller, 2014).

However, whether the CAPE is powerful enough to replace the 12-month based traditional P/E is still controversial. This has prompted a number of academics and researchers to investigate and seek more tools to predict future equity markets (Lechner, 2021; Siegel, 2016; Campbell & Shiller, 2001). Most of the studies on an efficient prediction of CAPE ratio have been carried out in relation to the U.S. market (Bunn & Shiller, 2014; Weigand & Irons, 2007). Few papers have been found to focus on emerging markets, and none focuses specifically on the Thai equity market, the second largest stock market in the 10-member Association of South-East Asian Nations (ASEAN). The Stock Exchange of Thailand (SET) has grown steadily in recent decades. However, it has endured much variability due to both domestic and international factors such as the 1997 Asian Financial Crisis and the US-induced 2008 financial crisis (Apaitan, Luangaram, & Manopimoke, 2022; Korn & Sorasart, 2021; 2022; Talhip & Sukcharoensin, 2021; Nimkhunthod, 2007). Since the CAPE ratio is widely accepted as lessening the cyclical impact in predictions, it is therefore compelling to seek to examine whether it efficiently forecasts returns on the Thai market. This present study does just that. Specifically, it attempts to investigate the predictability of the CAPE ratio and compare the predictive power of three relative valuation tools in relation to the Thai stock market: (i) the CAPE ratio, (ii) the P/E ratio, and (iii) the price-to-book ratio (hereinafter referred to as the 'P/B ratio'). The findings are expected to benefit investors and academics in asset valuation as well as portfolio management.

2. Literature Review

- *The Search for Effective Predictive Tools*

The efficient market hypothesis (EMH) is premised on the notion that for a capital market to be efficient, all relevant information must reflect stock prices. In its weak form, the Efficient Market Hypothesis fails to make it possible for investors to gain abnormal profits based on historical price information alone (Fama 1970; Malkiel 2003). Furthermore, as implied by the Random-Walk theory, stock prices fluctuate independently over time and are not related to the historical price pattern (Van Horne & Parker, 1967). Both theories are classics in the literature on finance. Although there are many supporters, they have been questioned. While the EMH assumption of gradual price adjustment has convinced some analysts that an arbitrage profit opportunity exists for immediate transactions, opponents of the EMH and Random-Walk model have argued that security prices are biased as shown by the P/E ratio, which acts as an indicator of the biasedness (Basu, 1977; Kenourgios, Papathanasiou, & Bampili, 2021; Malkiel, 2003).

Both economists and academics have long been searching for prediction tools that will help them forecast markets (Abbas & Wang, 2020; Avramov & Chordia, 2006; Lee & Rui, 2000). The most sought-after predictions relate to the relationship between earnings, prices, and dividends. The aim is to average long-term earnings, weaken short-term volatility, and minimize the impact of business cycles. As far back as 1934, Graham and Dodd came up with

the influential idea of replacing current earnings with long-term average earnings. They proposed that a sensible computation of securities should include average earnings that cover a minimum of five years and preferably seven to ten years. The concept was revisited by Campbell and Shiller in 1988 (Campbell & Shiller, 1988). when the real and excess returns on index were regressed on the dividend-price ratio, the dividend growth rate, the price-earnings ratio, and the additional two P/E ratios, based on 10-year and 30-year moving averages. The results provided early evidence that when returns are measured as moving average of their historical value, the E/P ratio serves as the most powerful predictor of stock returns. (Bunn & Shiller, 2014).

- *The Cyclically Adjusted Price-to-Earnings (CAPE) Ratio*

The CAPE ratio initially received attention in early December 1996, when Campbell and Shiller explained to the U.S. Federal Reserve that, in their view, the stock index was overrated, which prompted the Irrational Exuberance Speech a week later by the Federal Reserve Chairman, Alan Greenspan (Siegel, 2016). In 2001, Campbell and Shiller introduced the CAPE ratio in an innovative article entitled "Valuation ratios and the long-run stock market outlook." The term 'cyclically adjusted' refers to the way earnings are spread over the long term. More specifically, the CAPE ratio is based on index prices divided by the ten-year moving average of the last earnings per share instead of the one-year trailing total earnings used in traditional price-earnings ratio so that it is not affected by the typical business cycle (Asness, 2012). Since the ratio employs ten-year moving average of earnings per share, it is also known as the 'P/E 10.' In 2001, Campbell and Shiller used 10-year average stock returns in the U.S. and in twelve other countries from 1871 to 2000 regressed against their CAPE ratios. They found that the CAPE ratio offers standout forecasting capability among its valuation peers. It has turned out to be an astounding tool to detect over- and under- pricing securities. CAPE-based future stock return predictions have been remarkable (Campbell & Shiller, 2001; Lechner, 2021; Siegel, 2016).

The CAPE ratio allows investors to expect profits from equity even when the returns plunge as long as the market is underpriced (Jivraj & Shiller, 2017). According to Weigand and Irons (2007), who studied the relationship between the market P/E and CAPE ratios and U.S. future stock returns, there is a robust relationship between both ratios and future earnings. However, it was found that there are differences in predictions when market P/E ratios are very high. This study convinced the authors of the present article that one of the crucial factors behind an elevated P/E is earnings. In 2014, Bunn and Shiller extended their prior research by exploring the robustness of CAPE ratios across various sectors in the U.S. and constructing the Total Return CAPE and Relative CAPE ratios. The Total Return CAPE ratio considers the effect of dividend policy. As a ratio of the current value of CAPE over its own twenty-year average, the Relative CAPE ratio helps to remove long-term trends and intermediate cycles inherent in the original CAPE ratio. It is powerful tool to signal over- and under- valuation of CAPE. Bunn and Shiller's (2014) findings suggest that the CAPE ratio can be seen as a forecast that withstands inflation and variable corporate dividend policies. The predictability of CAPE was also confirmed in Bunn et al.'s (2014) study, in which the model was adjusted to account for accounting standards and growth expectations. The CAPE-based valuation was applied successfully in detecting an over- or undervaluation as well as for comparisons across sectors for rotation portfolio strategy.

As is the case with any measurement, the CAPE ratio has had its critics (Jivraj & Shiller, 2017; Keimling, 2016; Philips & Kobor, 2020; Siegel, 2016;). For one, the ratio has been found to be influenced by several factors more or less related to expected earnings. For example, stock prices can be suppressed when the movement does not reflect an overoptimistic expectation of earnings growth (Siegel, 2016). Moreover, the fall in stock returns caused by a

decrease in real bond yield may lead the CAPE ratio upward and any changes in equity risk premium required by investors can impact the earnings and CAPE. Changes in accounting practice and reported earnings have been reported to affect the CAPE ratio (Siegel (2016) According to Hodge (2011), Siegel (2016) evaluated the predictive power of the CAPE ratio using corporate profit (NIPA) as defined by the Bureau of Economic Analysis (BEA) (2023). Hodge (2011) concluded that the NIPA profit-based CAPE ratio exhibits powerful predictions compared to the forecast using reported earnings computed by Standard & Poor's. Employing S&P500 reported earnings to calculate the CAPE ratio biases the ratio upward and leads to a downward forecast of real stock returns.

- CAPE Variations

There is a large body of literature on the CAPE ratio in addition to its critics. Interestingly, the CAPE ratio can also be restructured to capture various features of equity markets (Bunn & Shiller, 2014; Davis et al., 2018; Jivraj & Shiller, 2017; Keimling, 2016; Klement, 2015; Philips & Ural, 2016; 2017; Siegel, 2016; Waser, 2021). The forecast ability is examined across countries, accounting practices, and index construction (Aras & Yilmaz, 2008; Klement, 2012; 2015; Lleo & Ziemba, 2020; Radha, 2020). It is empirically discussed by Siegel (2016) that using a firm's cash flows or revenues can enhance the CAPE's predictions. In Seigel (2016), the classic CAPE ratio and its variety are more efficient in predicting nominal returns than the real returns recommended by several studies (Bunn & Shiller, 2014; Campbell & Shiller, 1988; 2001; Shiller, 2015).

Keimling (2016) comparatively examined the efficiency of the classic Campbell and Shiller's CAPE ratio and the dividend-adjusted CAPE ratio, P/B ratio, P/E ratio, and price-to-cash ratio using Morgan Stanley Capital International (MSCI) country indices over the period 1969-2015. The study confirmed the outstanding predictive capability of the Campbell and Shiller's CAPE ratio and showed that CAPE is not only remarkable in predicting future returns but also serves as a good predictor of risk exposure. Surprisingly, though, the dividend-adjusted CAPE indicator does not outperform the classic Campbell and Shiller's CAPE ratio. The P/B value ratio, however, offers prediction similar to or even more reliable than the classic Campbell and Shiller's CAPE ratio (Campbell & Shiller, 1988) in forecasting returns and risks. The more stable book value does not require long-term smoothing. But since historical data is rather limited, they (they for what? Who?) are not very popular. P/E and price-to-cash ratios offered weaker predictions as corporate earnings and cash flows are highly volatile.

Jivraj and Shiller (2017) reexamined the validity of the CAPE ratio from various perspectives. Refuting Siegel's (2016) use of corporate profit as defined by NIPA profits; they argued that actual reported earnings per share is already a good proxy for earnings. There is no need to transform earnings into NIPA profit. However, Jivraj and Shiller (2017) suggested operating profit per share as an alternative proxy of earnings in the CAPE calculation. Their study confirmed that, in addition to the general value signal, the CAPE ratio offers remarkably consistent predictions in different time horizons and is a good measure of under- or overpricing. The study lent support to Bunn and Shiller's (2014) study for the efficacy of CAPE at a sectoral level. Philips and Kobor (2020) introduced a variation of CAPE that requires one-year earnings instead of ten. The idea is to discard the noise in each operating year and use the sales-to-price ratios as a proxy for temporal profit margin variation. The results are statistically significant. The new model provided a statistically significant forecast and was superior to the original CAPE model in terms of prediction. In addition, several research studies addressed the impact of economic variables on CAPE estimations. Klement (2015) introduced a macroeconomically fair CAPE that considers interest inflation and growth rates. The paper examined the difference among CAPE ratios from different countries and concluded that when the domestic currency depreciates, exports and domestic growth are likely to pick up and

domestic firms' earnings will eventually rise. Therefore, in addition to the CAPE ratios' ability to predict expected returns, the differences in CAPE between countries can offer predictions of foreign exchange rates, especially when CAPE and Earnings are highly correlated.

Davis et al. (2018) proposed a fair-value CAPE approach that conditions the mean reversion on bond yields, expected inflation rates, and financial volatility in the Vector Auto Regressive (VAR) model. The method provides an efficient forecast of real and nominal returns as forecast errors were less frequent than that in the traditional CAPE model. Lechner (2021) used CAPE-based valuations to forecast S&P 500 following the March 2020 Covid-19-induced deep plunge. An overvaluation and the continuing rise of the CAPE ratio at the time of the study suggest that a new high is likely to be reached; one that will surpass the 1999 historical peak. The rise of CAPE indicator was explained by the concept of 'irrational exuberance' mentioned above (Shiller, 2015). Waser (2021) revisited the predictability of the CAPE ratio relative to economic variables. The study suggested that more than 90 percent of the variation in the CAPE ratio coexist with economic fundamentals.

- CAPE and Markets around the World

The world economy has been growing in the last decades and so have equity markets. In addition to the U.S. Market, the initial CAPE ratio and its subsequent variations have been found to effectively predict stock returns in emerging countries. Aras and Yilmaz (2008) investigated the predictive power of the P/E ratio, market-to-book ratio, and dividend yield. Compared to the market-to-book ratio and the dividend yield, the P/E ratio was found to be insignificant in predicting stock returns in emerging market environments. The market-to-book ratio, however, could provide an efficient one-year period forecast. Klement (2012, 2015) examined the capacity of the CAPE ratio to forecast emerging markets, including Thailand. The study combined the data of the 35 countries to validate the finding. It was found that the CAPE ratio is an efficient measure to predict stock market returns over five years. The CAPE ratio has become actively used to measure the stock exchange performance in Asian markets.

The CAPE ratios of the Tokyo Stock Exchange and the Shanghai Stock Market are regularly disclosed to the public. The acceptance of CAPE in emerging markets is consistent with Leo and Ziemba's (2020) study, which stated that both the P/E and the CAPE ratio performed successfully in predicting crashes in the Shanghai and Shenzhen stock markets. Radha (2020) applied CAPE valuation to develop medium-term country yield forecast (CY-M) in countries other than the U.S. using Morgan Stanley Capital International All Countries World Index Excluding USA (MSCI ACWI ex USA Index) in an empirical study, it was concluded that CAPE is useful in estimating medium-term real return expectations in non-U.S. market. A country rotation international equity portfolio can therefore be constructed. Shiller, Black, and Jivraj (2020) extended the estimate of Excess CAPE Yield, as expounded by Shiller (2015) in his 2015 book entitled "Irrational Exuberance," to show investors the expected real returns during the COVID-19 pandemic across regions. They investigated excess real returns of equity over bonds during the pandemic in relation to excess real returns before the pandemic in the U.S., U.K., Europe, Japan, and China. Since interest rates are a significant component in stock valuation, the returns on stocks are influenced by the CAPE ratio and long-term interest rates (Shiller, 2015). The *Excess Cape Yield* is an inverse of CAPE minus the ten-year real interest rate. It reflects investors' desire to invest in stocks as opposed to treasury bonds.

The evidence of high Excess CAPE Yield in various markets during the pandemic points to investors' preference for stocks over bonds as stocks offer positive real returns and can be expected to withstand inflation. Kenourgios et al. (2021) studied the FTSE/ASE Large Cap Stock Index, which consists of the 25 largest and most liquid firms' stocks traded on the Athens Stock Exchange, during the period 1997-2018, a time during which Greece went through a

severe economic crisis, major transformations, and eventually recovery. These events made its financial market a good candidate for an empirical study. The findings indicate that the CAPE ratio was superior to the P/E ratios and P/B ratios in forecasting the market. Finally, a recent study by Raju (2022) examined the relationship between CAPE valuation and forward excess return in relation to the Indian S&P BSE 100 index. The author used monthly data from 1990 to 2022. The study concluded that the Indian stock index also follows the mean reversion as seen in other markets. There is an inverse relationship between CAPE and forward returns that ensures the predictability of the CAPE ratio. As with Jivraj and Shiller (2017), Raju (2022) found it difficult to apply CAPE ratio precisely in market timing.

- *The Price-earnings (P/E) Ratio, and Price-to-Book (P/B) Ratios*

The Price-earnings (P/E) ratio is one of the most popular tools used to determine whether the company's stock price is reasonably valued (Anderson & Brooks, 1996; Huang & Wirjanto, 2012; Molodovsky, 1995; Penman, 1996). According to Basu (1977), the P/E can be a powerful predictor and is an indicator of bias in security price. The P/E ratio is calculated by dividing the market value per share by the earnings per share. There are two kinds of P/E ratio: the trailing and the forward P/E (Wu, 2014). The trailing P/E is the standard form of P/E calculation that uses past earnings in estimation while the forward P/E requires earnings forecast in the estimation. Among prediction tools, the price-to-book (P/B) ratio is also one of the most widely accepted valuation matrices (Agirman & Yilmaz, 2018; Aras & Yilmaz, 2008; Keimling (2016; Kusmayadi, Rahman, & Abdullah, 2018). It is a ratio of the market price per share to the book value per share of the company. While the P/E is shareholders' vindication, the P/B ratio draws together both internal and external factors that affect stock prices (Block, 1995). Since the ratio can offer predictions that are as efficient as those of the CAPE ratio and the stable book value means, there is no need for long-term average as in P/E (Keimling, 2016). Because the P/E and the P/B ratios are both well-known prediction tools, they are selected as alternative predictors in this present research. Their predictions will be analyzed and compared to the predictions offered by the CAPE ratio.

- *The Stock Exchange of Thailand*

The Stock Exchange of Thailand (SET) is the second largest stock exchange in ASEAN. The SET was founded in 1975. At its inception in 1975, there were 8 listed companies on the first day of trading. In December 2022, more than 800 companies were listed, a clear indication of the remarkable growth of the SET. Despite its high potential as an emerging investment destination, the market has been susceptible to several risk factors such as floods, droughts, and epidemics. Market anomalies are highly influenced by both domestic and global impact (Apaitan et al., 2022; Khanthavit, 2020; Korn & Sorasart, 2021; 2022; Nimkhunthod, 2007; Wongbangpo & Sharma, 2002). As a small open economy, Thailand is highly vulnerable to external shocks as well as global financial cycles, let alone domestic political turmoil. The country has endured several military coups, gone through constitutional reforms, and been torn by riots (Prukumpai, Sethapramote, & Luangaram, 2022). It has also been through many economic crises, most notably beside mentioned above, the 1997 ASIAN Financial crisis. The very nature of the SET and the environment in which it operates make it compelling for additional research on CAPE ratio to effectively predict future (Talthip & Sukcharoensin, 2021). In this recent study, we will evaluate how CAPE ratio can predict return in the Stock Exchange for Thailand compared to other valuation tools including P/E ratio, the P/BV ratio. The study and application of CAPE in Thailand are currently limited.

3. Data and Methodology

This study follows the regression models proposed by Klement (2012), Siegel (2016), Shiller and Jivraj (2017), Kenourgios et al. (2021), and Raju (2022) to evaluate the predictive power

of the CAPE ratio regarding the SET. Real returns on the SET were regressed on their predictors including the CAPE, P/E, and P/BV ratios, respectively. 416 monthly data was collected for the period April 1988-December 2022. Table 1 lists the sources of the data used in this study. In addition to the data gathered from listed sources, another required variable was calculated. That is 10-year inflation adjusted average earnings, calculated as the moving average of 120 months with window size of 120 samples starting from May 1988 to December 2012. There are 296 months data sample available for analysis

Table 1: Sources of Data

| Data | Period (Month) | Source |
|----------------------|----------------------------|----------------------------|
| SET Index | April 1988 – December 2022 | Stock Exchange of Thailand |
| SET Index P/E Ratio | April 1988 – December 2022 | Stock Exchange of Thailand |
| SET Index P/BV | April 1988 – December 2022 | Stock Exchange of Thailand |
| SET Index EPS | April 1988 – December 2022 | Stock Exchange of Thailand |
| Consumer Price Index | April 1988 – December 2022 | Bank of Thailand |

- Real Returns on SET Index

The real return on SET index at time t (r_t) is calculated as a natural log of the ratio of real price at period (t) to real price in the period ($t - 1$)

$$r_t = \ln \frac{P_t}{P_{t-1}} \tag{1}$$

When the real returns on the SET Index are calculated for the future period $t+k$, the variable r_{t+k} represents returns on the SET Index in the $t+k$ period.

- CAPE Ratio

This study follows Campbell and Shiller’s approach to estimate CAPE ratios in each period (Campbell & Shiller, 2001; Siegal, 2016; Keimling, 2016; Shiller et al., 2020). The ratio is calculated using the following formula:

$$\text{CAPE Ratio} = \frac{\text{Price}}{\text{Average earnings for 10 years adjusted for inflation}} \tag{2}$$

or

$$\text{CAPE}_t = \frac{P_t}{\frac{1}{120}(EARN_t + EARN_{t-1} + \dots + EARN_{t-120})} \tag{3}$$

The analysis begins with an examination of the data series. They are first examined for stationarity, using the Augmented Dickey-Fuller (ADF) unit root test to ensure their qualification for the regression models (Dickey & Fuller, 1979). Any nonstationary data must be treated to ensure that it is stationary and does not cause spurious results.

Different regression models are then estimated. The real returns on the SET Index at time $t+k$ is regressed on the predictors at time t as recommended by Jivraj and Shiller (2017). The three estimations use three predictors, the CAPE ratio, the P/E ratio, and the P/BV ratio respectively, to determine which predictor is the best predictor of equity returns. The three regression models can be described as follows:

$$r_{t+k} = \beta_0 + \beta_k CAPE_t + \epsilon_{t+k,k} \tag{4}$$

$$r_{t+k} = \beta_0 + \beta_k P/E_t + \epsilon_{t+k,k} \tag{5}$$

$$r_{t+k} = \beta_0 + \beta_k P/BV_t + \epsilon_{t+k,k} \tag{6}$$

where $k = 120$

Once the regression estimations are completed, each estimation is examined for serial correlation to ensure model validity. Serial correlations can cause biased coefficients and may result in unreliable hypothesis testing. This study uses Breusch-Godfrey Serial Correlation LM Test to detect any serial correlation of the estimations (Verma & Bala, 2013).

Finally, to confirm the relationship between real returns on the SET Index and CAPE ratio as well as its predictor peers, this study follows Maharakkhaka, Ramasoot, and Kluaymai-Ngarm (2017) to use Johansen’s (1991, 1995) cointegration test. The cointegration test identifies long-term correlation between time series. Engle and Granger (1987) recommend that the cointegration test be superior to the regression approach since the regression estimation can be spurious and detrending does not solve spurious regression. The Johansen Cointegration Test generally reports two statistics, the Trace and the Maximum Eigen values. The hypotheses of the Trace and Maximum Eigen tests are as follows:

| | |
|-------------------------------|--|
| Trace statistics | H_0 : There are R cointegrating relations H_1 : There are more than R cointegration relations |
| Maximum eigenvalue statistics | H_0 : There are R cointegrating relations H_1 : There are $R + 1$ cointegration relations |

where r is the number of cointegrating relation

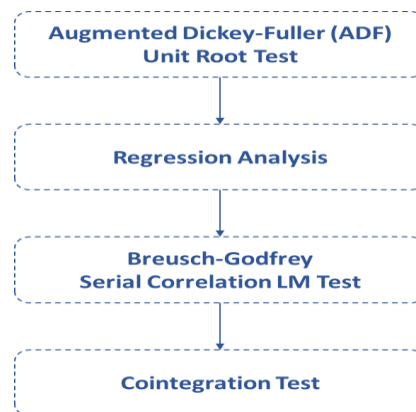


Figure 1: Research Flow (created by the authors for this study)

4. Results and Discussion

This part of the analysis covers the validity of all the variables before they are used in the regression equations. Table 2 summarizes the descriptive statistics of all the variables and Table 3 reports all the correlation among variables. It is shown that there is a small negative correlation between real returns on SET Index and each predictor.

Table 2: Descriptive Statistics

| Data series | r_{t+k} | $CAPE_t$ | PE_t | PBV_t |
|-------------|-----------|----------|----------|----------|
| Mean | 0.003217 | 15.20240 | 24.84492 | 4.191618 |
| Median | 0.007734 | 12.11509 | 20.36786 | 2.501179 |
| Maximum | 0.310420 | 46.60477 | 69.56396 | 17.40214 |
| Minimum | -0.346793 | 3.175464 | 5.342926 | 0.892040 |
| S.D. | 0.074421 | 9.443350 | 13.27630 | 3.358343 |

Table 3: Correlation Matrix

| | r_{t+k} | $CAPE_t$ | PE_t | PBV_t |
|-----------|-----------|-----------|-----------|-----------|
| r_{t+k} | 1.000000 | -0.024045 | -0.070759 | -0.059348 |
| $CAPE_t$ | -0.024045 | 1.000000 | 0.909403 | 0.842489 |
| PE_t | -0.070759 | 0.909403 | 1.000000 | 0.918957 |
| PBV_t | -0.059348 | 0.842489 | 0.918957 | 1.000000 |

All the data series were examined for stationarity using an Augmented Dickey-Fuller (ADF) unit root test to ensure data qualification (Dickey & Fuller, 1979). Tables 4A and 4B show the results of the Augmented Dickey-Fuller unit root test on the level and the first difference, respectively.

Table 4A: Augmented Dickey-Fuller Unit Root Test at Levels

| Augmented Dickey-Fuller Unit Root Test at Levels | | | | | | | |
|--|-----------|----------------|-----------|-----------|---------|-----------------|----------------|
| | | Critical Value | | | | | |
| | ADF | 1% level | 5% level | 10% level | P-value | Null Hypothesis | Stationarity |
| r_t | -17.28971 | -3.449857 | -2.870031 | -2.571363 | 0.0000 | Rejected | Stationary |
| $CAPE_t$ | -2.132090 | -3.449917 | -2.870057 | -2.571377 | 0.2323 | Accepted | Non-stationary |
| PE_t | -2.630189 | -3.449917 | -2.870057 | -2.571377 | 0.0879 | Accepted | Non-stationary |
| PBV_t | -2.197732 | -3.452442 | -2.871161 | -2.571968 | 0.2078 | Accepted | Non-stationary |

Table 4B: Augmented Dickey-Fuller Unit Root Test at First Difference

| Augmented Dickey-Fuller Unit Root Test at First Differences | | | | | | | |
|---|-----------|----------------|-----------|-----------|---------|-----------------|--------------|
| | | Critical Value | | | | | |
| | ADF | 1% level | 5% level | 10% level | P-value | Null Hypothesis | Stationarity |
| $DCAPE_t$ | -14.53203 | -3.449917 | -2.870057 | -2.571377 | 0.0000 | Rejected | Stationary |
| DPE_t | -13.68071 | -3.452442 | -2.871161 | -2.571968 | 0.0000 | Rejected | Stationary |
| $DPBV_t$ | -13.53035 | -3.452442 | -2.871161 | -2.571968 | 0.0000 | Rejected | Stationary |

As can be seen in these two tables, there is no unit root in real returns data series. The CAPE, P/E, and P/BV ratio data series contain unit root implying non-stationarity. The three data variables were, therefore, transformed into the first difference. The unit root test at the first difference confirms the stationarity of these three data series. All variables are now qualified for regression estimation. In this study, three regression equations were estimated. Each model has a stock returns predictor as an independent variable. These estimations reveal the relationship between each predictor and the real returns on the SET Index. The estimations were compared to find superior predictors among the CAPE, P/E, and P/BV ratios. Table 5 outlines the predictability of each independent variable to the dependable variable. It is found that the CAPE ratio and the P/BV ratio do not have a significant relationship with real returns on the SET index. Their correlation coefficients are close to zero and the null hypothesis of zero coefficient cannot be rejected. On the other hand, the P/E ratio is significantly related to the real returns of the SET Index although the correlation coefficient is very small. The small values of the coefficient of determination in the three estimations imply that the P/E ratio explains only in a small part the variation in returns of the SET Index. The main implication is that variations in the SET Index returns can possibly be explained by other variables.

Table 5: Regression Estimation

| Regression Estimation Result | | | | | |
|------------------------------|--|------------|--------------|---------|----------------|
| Model | $r_{t+k} = \beta_0 + \beta_k DCAPE_t + \epsilon_{t+k,k}$ | | | | |
| Variables | Coefficient | Std. Error | t-Statistics | P-value | R ² |
| $DCAPE_t$ | 0.003029 | 0.002584 | 1.242057 | 0.2151 | 0.004653 |
| Model | $r_{t+k} = \beta_0 + \beta_k DPE_t + \epsilon_{t+k,k}$ | | | | |
| Variables | Coefficient | Std. Error | t-Statistics | P-value | R ² |
| DPE_t | 0.002945 | 0.001422 | 2.071345 | 0.0391* | 0.012835 |
| Model | $r_{t+k} = \beta_0 + \beta_k DPBV_t + \epsilon_{t+k,k}$ | | | | |
| Variables | Coefficient | Std. Error | t-Statistics | P-value | R ² |
| $DPBV_t$ | 0.005515 | 0.007447 | 0.740582 | 0.4595 | 0.001868 |

* Indicates a rejection of the null hypothesis at 5% significance level

To ensure that the regressions are correctly specified, the three estimations were examined for serial correlation using Breusch-Godfrey Serial Correlation LM Test. Its purpose is to test whether the error terms in the time series are correlated. Table 6 presents the results of the Breusch-Godfrey Serial Correlation LM Test for the three regression models. As can be seen in this table, at a five percent significance level, the three regression estimations in this study have no serial correlation.

Table 6: Breusch-Godfrey Serial Correlation LM Test

| Breusch-Godfrey Serial Correlation LM Test | | | |
|--|--|---------|------------------|
| Model | $r_{t+k} = \beta_0 + \beta_k DCAPE_t + \epsilon_{t+k,k}$ | | |
| F-statistics | Obs*R-squared | P-value | Prob. Chi-Square |
| 0.169994 | 0.344259 | 0.8438 | 0.8419 |
| Model | $r_{t+k} = \beta_0 + \beta_k DPE_t + \epsilon_{t+k,k}$ | | |
| F-statistics | Obs*R-squared | P-value | Prob. Chi-Square |
| 0.116406 | 0.235823 | 0.8902 | 0.8888 |
| Model | $r_{t+k} = \beta_0 + \beta_k DPBV_t + \epsilon_{t+k,k}$ | | |
| F-statistics | Obs*R-squared | P-value | Prob. Chi-Square |
| 0.172197 | 0.348716 | 0.8419 | 0.8400 |

* Indicates a rejection of the null hypothesis at 5% significance level

Finally, a cointegration analysis was performed to confirm the predictability of the CAPE, P/E, and P/BV ratios. Table 7 shows the result of Johansen Cointegration Test. The result of Trace and Maximum Eigen hypothesis test are reported accordingly. The P-value of less than 0.05 leads to the rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_1) as described in earlier sections.

Table 7: Johansen Cointegration Test

| Cointegration Test - r_{t+k} and $CAPE_t$ | | | | | | |
|---|------------|------------------|----------------|---------------------|----------------|---------|
| H_0 | Eigenvalue | Trace Statistics | Critical Value | Max-Eigen Statistic | Critical Value | P-value |
| $R = 0$ | 0.200017 | 67.10994 | 15.49471 | 64.94091 | 14.26460 | 0.0000* |
| $R \leq 1$ | 0.007426 | 2.169034 | 3.841465 | 2.169034 | 3.841465 | 0.1408 |
| Cointegration Test - r_{t+k} and PE_t | | | | | | |
| H_0 | Eigenvalue | Trace Statistics | Critical Value | Max-Eigen Statistic | Critical Value | P-value |
| $R = 0$ | 0.225727 | 78.76946 | 15.49471 | 74.44692 | 14.26460 | 0.0000* |
| $R \leq 1$ | 0.014744 | 4.322548 | 3.841465 | 4.322548 | 3.841465 | 0.0376* |
| Cointegration Test - r_{t+k} and PBV_t | | | | | | |
| H_0 | Eigenvalue | Trace Statistics | Critical Value | Max-Eigen Statistic | Critical Value | P-value |
| $R = 0$ | 0.204477 | 70.20216 | 15.49471 | 66.56782 | 14.26460 | 0.0000* |
| $R \leq 1$ | 0.012411 | 3.634337 | 3.841465 | 3.634337 | 3.841465 | 0.0566 |

As indicated in Table 7, there can be at most one cointegration relation between returns on the SET Index at time $t+k$ and the SET Index CAPE ratio. There are more than one cointegration relations between returns on the SET Index at time $t+k$ and the SET Index P/E ratio. Lastly, there is at most one cointegration relation between returns on the SET Index at time $t+k$ and the SET Index P/BV ratio. The cointegration results are derived at five percent significance level.

According to the findings, the regression estimation does not support efficiency of the CAPE ratio to predict the real returns on the SET Index. This study, however, follows the original model of CAPE ratio estimation as proposed by Campbell and Shiller (2001). Until recently, there are a number of research on the variations of the CAPE ratio such as the Fair-Value CAPE (Klement, 2015; Waser 2021) and the Total Return CAPE (Bunn & Shiller, 2014; Jivraj & Shiller, 2017). In addition, Philips and Ural (2017) have provided evidence that the CAPE ratio offers better predictions of nominal returns than real returns. These various studies demonstrate that the CAPE ratio is sensitive to several factors (Klement, 2015). An application of CAPE should therefore take into account economic variables so as to provide robust predictions. The findings in this current research, however, are in line with Waser (2020) where the mean-reversion condition of CAPE is not met due to economic variables. Thus, there are possibilities that the prediction of real returns on the SET Index requires variant CAPE ratios to reflect volatility of economic indicators.

While the earlier regressions of the SET Index returns on the CAPE ratio do not support predictability of the CAPE, the cointegration test reveals that the real returns on the Set Index are integrated with the CAPE ratio in long-term. The cointegrating relation, however, may not be sufficient to reflect the finding in regression analysis. Among the three return predictors examined in the regression estimation, the P/E ratio is the only predictor that has a significant relationship with the real returns in the SET Index. While the P/E ratio is short-term based as opposed to long-term mean-reversion assumption of the CAPE ratio in forecasting stock returns, they are widely accepted among analysts due to simplicity and compromising data requirement (Aras & Yilmaz, 2008; Keimling 2016; Kenourgios et al., 2021). The P/E ratio exhibits a

cointegration relation with the SET Index returns. There is no significant relationship between the book-to-value ratio and the SET Index returns in the regression estimation. This finding contradicts Keimling's (2016) suggestion that the price-to-book ratio provides robust predictions. Like the other two predictor peers, the price-to-book value ratio is integrated to the SET Index returns in the long term.

5. Conclusion

The objective of this study is to investigate the predictability of the CAPE ratio in the Stock Exchange of Thailand. As noted earlier, the CAPE ratio has been hailed by many economists as offering a superior forecast relative to other measurements such as the P/E and price-to-book value ratios. This is because the CAPE ratio requires an average of 10-year earnings. This long-term average concept is believed to withstand short-term economic volatility. While there is a large body of literature on the predictability of the CAPE ratio in the U.S. stock markets, the study of CAPE in the context of Thailand and the Thai stock market is rather limited. Thailand is a small open economy vulnerable to cyclical shocks that has been through several crises caused by domestic and global factors such as the above-mentioned 1997 ASIAN Financial crisis and the 2007 US subprime crisis. This makes Thailand a good candidate for a study of the CAPE ratio. Specifically, this research examined the efficiency of the CAPE ratio to predict returns on the SET Index compared to the P/E and price-to-book value ratios, using a regression model.

The findings in this study do not support a superior prediction of the CAPE ratio. The estimation suggests that only the P/E ratio has a significant relationship with real returns on the SET Index. The cointegration test was included in this analysis to confirm the forecast ability of these predictors. It is found that returns on the SET Index have significant long-term cointegration with all three predictors. These inconclusive evidence leads to further research opportunities since there are CAPE ratio variants recommended in the relevant vast body of literature. The possibility that the predictability of the CAPE ratio in this study may be affected by external factors, i.e., economic variables and accounting practices, cannot be discarded. Finally, the results in this study are in keeping with prior research that suggest variation in CAPE calculation for a more efficient prediction.

- Limitations of this Study and Future Research

This study has limitations. The first limitation concerns the historical data. While the SET Index returns are available from the time the exchange was founded, in 1975, data on predictor ratios are only available from 1988 onward. Since CAPE predictions assume a 10-year average in earnings, earnings information over the past ten years is used to predict current returns on the SET Index. Therefore, a larger data sample might allow us to achieve more efficient predictions. Another limitation is that, as mentioned earlier, there are variations in the CAPE ratio calculations, which consider economic variables such as interest rates and inflation. Since CAPE ratios taking into account these variables are viewed by some academics (Davis et al., 2018; Klement, 2015; Lechner, 2021; Waser, 2021) as superior to the classic CAPE, there is an opportunity for future studies to empirically examine the efficiency of the CAPE ratio in its variation. Moreover, to date, there is no definite proof that the use of CAPE as market predictor is precise and perfectly accurate in every situation. As prior studies and this present article have demonstrated, while the CAPE ratio has proved to be an effective predicting tool in many markets, it has been less effective in others. It would therefore be useful to monitor CAPE movements as an indicator to assess the market situation together with other financial factors to assist the investors in making the right investment decision.

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Efficiency of Remote versus Office Work in IT Project Implementation and Engineering Mindset of Project Team Members

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Abstract.

The purpose of this quantitative study is to compare the efficiency and outcomes of IT projects when implemented in a remote environment versus an office setting. Data was collected via a survey questionnaire and the respondents divided into two groups according to their roles in the projects. One group consisted of project team members, such as developers, business analysts, and quality assurance, and the other of project managers. Descriptive statistics were used to analyse the data. The findings show that there are significant differences between the remote work styles of project managers and team members as expressed in terms of productivity, effective teamwork, job satisfaction, stress and pressure management, and opinions. Whereas project managers, who must work closely with team members, face significant limitations working remotely, others can work independently away from their offices as fewer contacts with team members are needed. It was also found that the engineering mindset of project team members is a key factor in the success or failure of IT projects. Those with a strong engineering mindset are more likely to successfully implement projects.

Keywords: Project Implementation, Remote Work, Office Work, Engineering Mindset

1. Introduction

The COVID-19 pandemic has brought about significant changes in the way we work (Yang et al., 2022). This is especially the case with remote work. Indeed, according to the World Economic Forum (2020), distance work has increased by 159% during the period 2005-2020. And the International Labor Organization (ILO) reported that from 2014 to 2019, the number of remote jobs went up by 300% (ILO, 2020). As a result, distance work has become part of the 'new normal;' a change that has had consequences in some industries – in the information technology (IT) sector and IT projects in particular. Working remotely can pose challenges to project outcomes as project teams need special skills, techniques, tools, and mindset to keep running projects smoothly (Henke, 2022). IT projects are at the core of this study. Specifically, this research aims to compare the differences in terms of work efficiency and outcomes implementing IT projects when working in the office on the one hand and working in a virtual or remote environment on the other. It also seeks to identify the factors that may influence the so-called engineering mindset of project team members when implementing projects in social distancing situations. In a nutshell, an engineering mindset refers to a method of thinking that combines the problem-solving design process with the interpersonal skills necessary for teamwork (Project Academy, 2018). As can be easily seen, an engineering mindset is critical to implement projects smoothly, all the more in the case of remote work. The study aims to answer the following research questions:

- What are the differences in terms of work efficiency and outcomes between implementing IT projects working in the office and working from a remote environment?
- What factors related to the engineering mindset of an IT project team may affect the success or failure of an IT project?

The methodology employed in this study involves collecting data through a survey administered to respondents whose work is or has been related to IT projects.

2. Literature Review and Hypothesis Development

- *IT Projects*

Akampurira (2013) described an IT project as a type of project that involves the use of various resources to create beneficial outcomes for the target group. It has also been defined as a task that is completed over a certain period of time utilizing technology (Joseph, 2022). An IT project encompasses all the parts of an endeavour strategy; design, implementation, project management, and training. All these activities must be independent, able to be analyzed, planned, and managed, have clear objectives, a definite period of time, and be within budget while ensuring quality work that meets specified criteria (Akampurira, 2013). IT projects are essential for organizational success factors as they increase competitiveness and improve efficiency and productivity. They, however, pose challenges to the personnel within the organization. Tohidi (2011)

- *Key Terms Defined*

Working from home and distance working have become more prevalent in recent times, particularly with the advent of the Covid-19 pandemic, which has been an accelerator of trends. Since these alternative forms of work may have long-term effects on various aspects of people's working habits, including how they organize their work and where it is performed, it is especially important to clearly understand the following four key concepts at its root and how they relate to one another: remote work, telework, work-from-home, and home-based work.

- *Remote Work:* Diab-Bahman and Al-Enzi (2020) define remote work as a situation where work is fully or partly carried out at an alternative worksite other than the default place of work.

- *Telework:* Ruiller et al. (2019) determined that telework is a subcategory of remote work that involves workers who use information and communication technology or landline telephones to work remotely.

- *Work from Home:* Work from home is work that takes place fully or partly within the worker's own residence, whereby the physical location in which all or some of the work is carried out is the worker's own home (Milenin, 2020).

- *Home-Based Workers:* As outlined in the resolution concerning statistics on work relationships, the International Labour Organization (ILO, 2020) defines home-based workers as workers whose main place of work is their own home.

- *Advantages and Disadvantages of Distance Work*

Lentjushenkova and Simenenko (2021) conducted a study on the advantages and disadvantages of remote work in Latvia and found that the advantages cited by respondents were : (i) Ability to organize personal work space (37.47%), (ii) Availability of choice in equipment (16.90%), (iii) Ability to choose work location (8.58%), (iv) Ability to choose work schedule (7.88%), (v) Savings on commute time (6.21%), (vi) Savings on commute expenses (5.53%), (vii) Ability to independently organize work process (3.96%), (viii) Opportunity for individual work (3.31%), (ix) Ability to work without constant supervision (3.17%), (x) Opportunity to reduce distractions from other employees (2.59%), (xi) Opportunity to spend more time with family and have hobbies (2.24%), and (xii) Ability to work on other tasks simultaneously (2.15%).

On the other hand, the disadvantages of remote working were found to include: (i) Difficulty in organizing work space (37.61%), (ii) Limited access to equipment (9.66%), (iii) Poor internet signal (6.57%), (iv) Irregular work schedule (6.32%), (v) Difficulty completing tasks over the internet (5.00%), (vi) Disorganized communication over the internet (4.62%), (vii) Limited access to work-related information (4.17%), (viii) Lack of face-to-face communication with management (3.43%), (ix) Lack of face-to-face communication with colleagues (3.16%), (x) Limited supervision by management (2.84%), (xi) Difficulty getting into a work mindset in the morning (2.21%), (xii) Difficulty disconnecting from work in the evening (2.15%), (xiii) Lack of change in environment (2.03%), (xiv) Feeling of isolation (1.96%), (xv) Distractions from family and household tasks (1.75%), (xvi) Difficulty motivating oneself (1.56%), (xvii) Lack of balance between work and personal life (1.50%), (xviii) Lack of inspirational working atmosphere (1.28%), (xix) Overload of information (1.14%), and (xx) Overload of communication (1.06%).

Lentjushenkova and Simenenko's (2021) study on the advantages and disadvantages of remote work in Latvia identified two main groups of disadvantages. One group includes disadvantages that have an impact or directly relate to the project, namely, difficulty in organizing a work space, lack of equipment, poor internet signal, irregular work schedule, difficulty completing tasks over the internet, disorganized communication over the internet, limited access to work-related information, lack of face-to-face communication with management, lack of face-to-face communication with colleagues, limited supervision by management, lack of inspirational working atmosphere, overload of information, and overload of communication. These various items represent 86.85% of the total topics discussed. The second group includes disadvantages that do not have an impact or directly relate to the project, namely, difficulty getting into a work mindset in the morning, difficulty disconnecting from work in the evening, lack of change in environment, feeling of isolation, distractions from family and household tasks, difficulty motivating oneself, lack of balance between work and personal life. They represent 13.15% of all the topics discussed.

- Engineering Mindset

As mentioned in the introduction, the engineering mindset is a method of thinking that combines the problem-solving design process with the interpersonal skills required for teamwork (Project Academy, 2018). It focuses on identifying problems, providing effective solutions, designing, and developing adaptive and innovative products, and fostering a continuous learning attitude through curiosity and exploration (Caluori, 2014). As such, it encompasses the culture, metrics, feedback, planning abilities, tools, and values of engineering. The engineering mindset and motivation are often closely linked to goal-orientation and leadership. In their study on the correlation between engineering mindset skills and leadership and management skills, Jamieson and Donald (2020) determined that individuals with a strong engineering mindset, particularly those who place an emphasis on technical characteristics, communication, and teamwork, are more likely to improve organizational and societal leadership than those who adopt a traditional engineering approach. A comparative study on the engineering mindset of fifth graders aged 10 to 11 in the United States, using a sample of 2,086 individuals, found that students who received additional education in engineering skills had significantly higher scores in the Engineering Mindset questionnaire, an indication of improved academic, social, communication, and problem-solving skills. They also demonstrated greater ability to cope with and learn from failure compared to the average student group (Lottero and Lachapelle, 2020). A study about teaching engineering concepts in a STEM context found that engineering concepts allow students to apply engineering thinking to analyze and solve complex scientific problems and find more relevant and meaningful answers (Cunningham, 2017).

3. Research Design and Methodology

The hypothesis for this study is as follows. Since most of the disadvantages associated with remote working (86.85% of them) are related to project factors, and since human resources are a crucial aspect of project implementation, the engineering mindset of the project team members will have a direct impact on the efficiency and results of the project. However, various factors may influence work efficiency in remote work, such as personal, project, or external factors. Figure 1 captures the framework of this study and the concepts on which it is based.

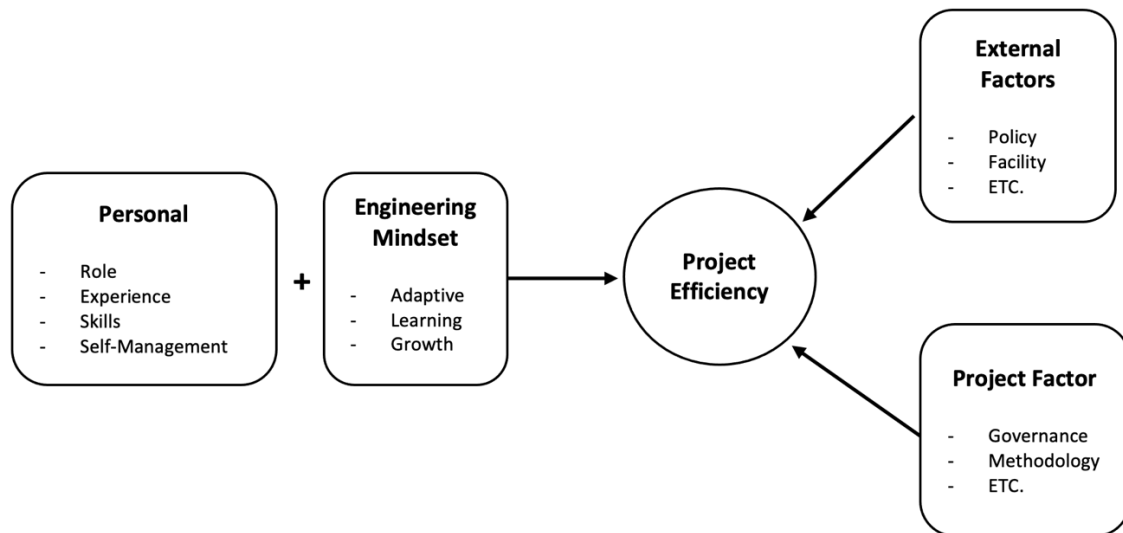


Figure 1: Conceptual Framework Diagram (created by authors for this study)

The survey instrument consisted of an online questionnaire using Google Forms, specifically developed for this study. The target population for the survey was IT professionals working remotely. The questionnaire was answered by a total of 112 respondents, who met the criteria of being IT professionals engaged in remote work (see list in Table 4). The questionnaire is divided into 3 parts: The first part is about the respondents' profiles. The second part concerns itself with the respondents' experience with distance working. The third part relates to project managers' perception of the engineering mindset (see Appendix 1 for the set of questions related to an engineering mindset). The questionnaire uses a 5-point Likert scale to indicate the degree of agreement, where 1 is "Absolutely disagree" and 5 "Absolutely agree".

The questions used in the engineering mindset section were heavily influenced by Ricco, Girtz, and Silliman's (2017) study, which includes questions both positively and negatively formulated to test the reliability of the responses from project team members. As can be seen from the list of questions shown in Appendix 1, the engineering mindset can be sub-divided into 3 types of mindsets: Adaptive, Growth, and Learning (Umaji & Paireekreng, 2021).

Table 2 defines each type and indicates the questions shown in Appendix 1 to which they relate.

Table 2: Categorization and Cronbach’s Alpha Calculation Results

| Type of Mindset | Definition | Question Number (see Appendix 1) | Cronbach’s alpha |
|-----------------|---|----------------------------------|------------------|
| Adaptive | A mental attitude consisting in assessing the facts and circumstances of a situation and/or environment and making the appropriate adjustments to thrive in any scenario. | 1,2,3,11,13,16 | 0.807 |
| Growth | An approach to life in which an individual believes that his/her talent, intelligence, and abilities can be developed further. | 4,5,7,8,9,12 | 0.796 |
| Learning | An attitude that predisposes openness to new experiences. There is a belief that abilities can be developed by learning and intentionally growing from experience. | 6,10,14,15 | 0.812 |

Cronbach's alpha was used to assess the reliability and internal consistency of the set of questions. The formula for Cronbach’s alpha is as follows:

$$(1) \quad \alpha = \frac{N\bar{c}}{\bar{v} + (N - 1)\bar{c}}$$

Where: N = the number of items
 \bar{c} = average covariance between item-pairs
 \bar{v} = average variance.

A Cronbach's alpha of 0.807 for adaptive mindset, 0.796 for growth mindset, and 0.812 for learning mindset indicate that the items measuring each type of mindset are highly correlated with each other, suggesting that they measure the same underlying constructs or concepts. This means that the items are reliable and consistent in measuring the intended construct.

The Cronbach's alpha results shown in Table 3 indicate the internal consistency of the items measuring each type of engineering mindset (Adaptive, Growth, and Learning). The values of Cronbach's alpha for each type of mindset are all above 0.7, which is generally considered an acceptable level of internal consistency.

Table 3: Cronbach's Alpha Interpretation

| Result | Interpretation |
|--------|----------------|
| > 0.9 | Excellent |
| > 0.8 | Good |
| > 0.7 | Acceptable |
| > 0.6 | Questionable |
| > 0.5 | Poor |
| < 0.5 | Unacceptable |

This study uses descriptive statistics and the mean average method to find the difference between the success and unsuccess of the project team in terms of the engineering mindset of its members. In addition, Standard Deviation is employed to prove the deviation of the result. Using a Mean and Standard Deviation as statistical measures is appropriate in this context as they provide simple and easy-to-understand descriptions of the central tendency and variability of the scores for each type of mindset. Cronbach's alpha values indicate that the items are

measuring the same underlying constructs with good internal consistency, so the Mean and Standard Deviation should provide a reliable summary of the data for each type of mindset (see Table 6 in the next section for the results).

4. Results and Discussion

As mentioned above, all the survey participants are working on IT projects in various capacities. Based on their respective roles in the projects in which they are involved, they can be lumped together into the following groups:

Table 4: Roles and Percentages

| Role | Number | Percentage |
|---|------------|------------|
| Developers (Dev) | 35 | 31.13% |
| Product Owners (PO), Business Analysts (BA), System Analysts (SA) | 26 | 23.03% |
| Quality Assurance (QA), Testers | 24 | 21.17% |
| Project Managers (PM) | 22 | 20.36% |
| Others (IT Support, Recruiters, Top Management etc.) | 5 | 4.31% |
| | 112 | |

The various roles under which the respondents take part in IT projects can be grouped into two main areas: Project Managers and Project Executors. The latter includes developers, product, business, and system analysts, as well as quality assurance and testers. The findings indicate that the two groups produce clearly different results in terms of work productivity, work enjoyment, and stress and pressure management.

As can be seen in Table 5, there are notable differences in several dimensions between the perception of project managers and that of project executors (the others involved in IT projects). For one, the majority of project managers reported less productivity and more stress and pressure compared to executors. Additionally, project managers reported less enjoyment working on IT projects than executors did. One possible interpretation for these discrepancies is that project managers may be more heavily involved in coordinating and managing the work of various team members, which could lead to more stress and pressure and result in less productivity.

In contrast, assuming different roles, such as product owners, business analysts, system analysts, developers, and quality assurance, may have more autonomy to work independently, which can lead to higher productivity and enjoyment. Furthermore, the survey results suggest that working remotely may be more challenging for project managers than for others involved in IT projects because the former rely heavily on communication and collaboration with team members and may therefore find it more difficult to coordinate and manage their work remotely.

Table 5: Percentage Results

| Topic | Measurement | PM | PO/BA/SA | Dev | QA |
|--------------|-------------------|---------------|---------------|---------------|---------------|
| Productivity | Less Productivity | 61.04% | 11.64% | 13.45% | 27.78% |
| | Not sure | 12.09% | 21.35% | 21.83% | 26.77% |
| | More Productivity | 26.87% | 67.01% | 64.72% | 45.45% |
| | Less Enjoy | 51.13% | 10.18% | 16.56% | 17.24% |

| Topic | Measurement | PM | PO/BA/SA | Dev | QA |
|--------------------------------------|--------------------------|---------------|---------------|---------------|---------------|
| Work Enjoyment | Not sure | 26.38% | 27.84% | 19.05% | 25.32% |
| | More Enjoy | 22.49% | 61.98% | 64.39% | 57.44% |
| Stress and Pressure Management | Less Stress and Pressure | 17.45% | 52.62% | 54.34% | 48.97% |
| | Not sure | 27.68% | 19.20% | 16.82% | 23.61% |
| | More Stress and Pressure | 54.87% | 28.18% | 28.84% | 27.42% |

The data shown in Table 5 can be explained as follows:

- *Project Managers (PM)*: The survey results suggest that project managers experience higher levels of stress and pressure and lower levels of productivity and enjoyment compared to others involved in a project in different roles. This could be due to the fact that project managers are responsible for overseeing and coordinating the work of multiple team members, which can be a challenging and demanding task. In addition, project managers may have to deal with issues such as resource allocation, timeline management, and stakeholder communication, which can be stressful and time-consuming. The results also suggest that working remotely may be more challenging for project managers, as they may need to rely more heavily on virtual communication and may find it harder to monitor and coordinate the work of their team members.

- *Product Owners / Business Analysts / System Analysts (PO/BA/SA)*: According to the survey results, those in these roles report higher levels of productivity, enjoyment, and lower levels of stress and pressure compared to project managers. This may be because these roles provide more autonomy and opportunities to work independently and may not involve as much responsibility in terms of overseeing and coordinating the work of others. Additionally, these roles may be more focused on tasks such as requirement gathering, design, and problem-solving, which can be more engaging and rewarding.

- *Developers (Dev)*: The findings indicate that developers report high levels of productivity and enjoyment, but also experience moderate levels of stress and pressure. This can be accounted for by the fact that developers are responsible for building and coding software, which can be a challenging and technically complex task. However, the results suggest that developers may be able to work relatively independently and may have a high degree of control over their work, which could contribute to higher levels of productivity and enjoyment.

- *Quality Assurance (QA)*: The results indicate that quality assurance professionals report moderate levels of productivity and enjoyment, but also experience moderate levels of stress and pressure. This may be because quality assurance involves a lot of testing, which can be repetitive and time-consuming. Additionally, quality assurance professionals may need to work closely with developers to identify and resolve bugs and issues, which can be stressful and requires strong communication and collaboration skills.

- *Engineering Mindset of Team Members*

Another research question to address is the engineering mindset of an IT project team and how it may affect the outcome of an IT project. The survey results indicate that work efficiency is directly correlated to the engineering mindset of team members. The group of respondents with the highest scores as shown in Table 5 will have a positive effect on remote work. In other words, they are suitable for remote work and can work efficiently in such a remote environment. Conversely, those with low scores will have a negative effect on remote work and are therefore more predisposed to work in an office or in a face-to-face environment.

It is interesting to note that a significant proportion of respondents who answered 'Not sure' on the three topics fell within the moderate range of engineering mindset percentage. This observation suggests a potential association between uncertainty in responses and specific aspects of the engineering mindset. It may indicate a need for these individuals to collaborate closely with their supervisors to seek advice or enhance their decision-making confidence. Furthermore, this subgroup represents a valuable target for further research on developing the engineering mindset. By understanding their challenges and areas for improvement, interventions can be designed to enhance their adaptive skills and learning capabilities, ultimately fostering their growth in the field of engineering.

Table 6 presents the mean scores and standard deviations (SD) of the three different groups for the three different topics related to the engineering mindset. The topics include productivity, work enjoyment, and stress/pressure management. The groups are categorized based on the survey results.

The Engineering Mindset and Productivity

The "More Productive Group" reported a mean score of 4.12 with a standard deviation of 0.81. This indicates that participants in this group, who were identified as more productive based on the survey results, showed a higher level of association between the engineering mindset and productivity. The "Less Productive Group" had a mean score of 3.76 with a standard deviation of 0.72. This suggests that participants in this group, who were identified as less productive, exhibited a somewhat lower level of association between the engineering mindset and productivity. The "Not Sure" group had a mean score of 3.23 with a standard deviation of 0.83, indicating a lower level of association between the engineering mindset and productivity, and a higher variability in responses compared to the other two groups.

The Engineering Mindset and Work Enjoyment

The "More Enjoy Working Group" reported a mean score of 4.01 with a standard deviation of 0.78, indicating that participants who were categorized as enjoying their work more, based on survey results, had a higher level of association between the engineering mindset and work enjoyment. The "Less Enjoy Working Group" had a mean score of 3.76 with a standard deviation of 0.73, suggesting a slightly lower level of association between the engineering mindset and work enjoyment for those categorized as enjoying their work less. The "Not Sure" group reported a mean score of 3.33 with a standard deviation of 0.76, indicating a lower level of association and slightly higher variability in responses.

The Engineering Mindset and Stress/Pressure Management

The "Good Management" group reported a mean score of 4.03 with a standard deviation of 0.86, indicating a positive association between the engineering mindset and the ability to manage stress and pressure for those who were identified as having good stress management skills based on the survey. The "Not Good Management" group had a slightly lower mean score of 3.91 with a standard deviation of 0.79, suggesting a lesser degree of association between the engineering mindset and stress/pressure management for those identified as not having good stress management skills. The "Not Sure" group reported a mean score of 3.72 with a standard deviation of 0.71, showing the lowest level of association among the groups.

In summary, the data show that there is a positive association between the engineering mindset and productivity, work enjoyment, and stress/pressure management. The degree of this association varies among different groups categorized based on their productivity, work enjoyment, and stress management skills, as derived from the survey results. Those in the more productive, more enjoy working, and good management groups generally have a higher association with the engineering mindset compared to the other groups.

Table 6: Mean Average and Standard Deviation

| Topic | Group | Mean | SD |
|--|--------------------------|------|------|
| The Engineering Mindset and Productivity | More Productive Group | 4.12 | 0.81 |
| | Less Productive Group | 3.76 | 0.72 |
| | Not Sure | 3.23 | 0.83 |
| The Engineering Mindset and Work Enjoyment | More Enjoy working Group | 4.01 | 0.78 |
| | Less Enjoy working Group | 3.76 | 0.73 |
| | Not Sure | 3.33 | 0.76 |
| The Engineering Mindset and Stress/Pressure Management | Good management | 4.03 | 0.86 |
| | Not Good management | 3.91 | 0.79 |
| | Not Sure | 3.72 | 0.71 |

5. Conclusion

Distance working is likely to become the new standard in today's work environment. Therefore, it is important for everyone to adapt and learn, especially with regard to IT projects and their implementation. The results in this research indicate that as far as IT projects are concerned, remote work has limitations and is not suitable for every team member involved in an IT project and the roles they play respectively. The roles of project managers and those of operators (developer, QA, BA etc.) are different due to the differences in their tasks and work styles. Project managers need to be in close contact with team members to ensure most efficient performances. In that respect, working remotely is clearly a limitation and an obstacle. It is therefore imperative for project managers to adapt and develop new work methods that meet the changing environment while maintaining the quality and the supervision of the work of all those involves as project operators.

On the other hand, for all those whose roles in IT projects involve specific areas of responsibility and/or little contact with others, obviously remote operations pose fewer problems and obstacles in remote operations, if any at all. As a matter of fact, when combined with other external factors such as commuting time, time management, or work-life balance, distance working may end up generating more time to focus on one's job and providing real opportunities for higher efficiency. For all those roles, continuing working under a remote working model may thus be desirable and more conducive to higher productivity. As to the engineering mindset in the context of remote work, it was found that those with higher engineering mindset scores were more likely to be able to work on remote projects and at the same time be more efficient than those with low score averages. In other words, project implementation has a greater chance of success when project members truly have an engineering mindset, i.e., when their focus is on the three key skills that in this study represent an engineering mindset.

As we saw earlier, these skills include an (i) Adaptive mindset, the ability to cope with change or problems that may arise, (ii) a Growth mindset, the ability to ensure that there are no restrictions on operations or solutions, and (iii) a Learning mindset, the ability to find new approaches or formats that are suitable for operations, including learning lessons from failures in order to further improve. As the COVID-19 pandemic and the necessity to work from home because of social distancing made it abundantly clear, IT projects conducted in remote environments require individuals capable of adapting to changing situations and quickly learning key skills in order to increase efficiency. The engineering mindset precisely contains these key skills critical to enhancing the capabilities of project team members. Therefore, the implementation of IT projects in a remote environment requires all team members to develop greater engineering mindset skill sets in order for them to be ready to deal with ever-changing situations.

The survey results, when analyzed both in terms of respondents' efficiency and engineering mindset, reveal that individuals with higher engineering mindset scores were far more likely to work more efficiently on remote projects than those with lower scores. This aligns with the findings of Umaji and Paireekreng (2021), who established that project managers who achieved higher scores in engineering mindset measures were markedly more adept at working efficiently relative to those who scored lower. These findings are also consistent with the study results of Jamieson and Donald (2020) on the relationship between engineering mindset and leadership and Lottero and Lachapelle's (2020) determination that people with a good engineering mindset will also have a good growth mindset (Growth) and adaptability (Adaptive) to cope with and solve problems. They can learn from their mistakes and use them as guides for future self-improvement, including the ability to analyze, find answers, and solve problems effectively. This is also in keeping with Cunningham (2017), whose study on the application of engineering concepts to science teaching (STEM) concluded that engineering concepts help students apply engineering thinking to solve scientific and complex problems. Clearly, the engineering mindset of team members and the skills associated with it may be one of the deciding factors in the management's choice of project implementation approach.

- *Suggestions for Further Studies*

How to develop an engineering mindset in the context of IT projects, or elsewhere, could precisely be the topic of future studies. Indeed, while this study has emphatically highlighted the need for developing a strong engineering mindset, it did not focus on how to measure the engineering mindset of team members or on how to build or improve their engineering mindset and the role of human resources in improving project success rates. Other factors that could be considered for further studies and investigated more closely include the educational level, certification, or previous work experience of team members and their importance in a remote work environment. There may also be additional factors in the context of an IT project that may affect the performance and implementation outcome of an IT project implementation, such as team-specific skills, high-level management support, technology, or the organization policy. They all may be part of the considerations for further research. Also related to the latter topic and another direction for further studies is organisational support and allocation of resources for remote working.

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Appendix 1

Survey Questions Related to Project Team Member's Engineering Mindset

| No. | Positive (P) or Negative (N) | Question |
|-----|------------------------------|--|
| 1 | N | You have a certain amount of intelligence, and you really can't do much to change it |
| 2 | N | Your intelligence is something about you that you can't change very much. |
| 3 | P | No matter who you are, you can significantly change your intelligence level |
| 4 | N | To be honest, you can't really change how intelligent you are |
| 5 | P | You can always substantially change how intelligent you are |
| 6 | N | You can learn new things, but you can't really change your basic intelligence |
| 7 | P | No matter how much intelligence you have, you can always change it quite a bit |
| 8 | P | You can change even your basic intelligence level considerably |
| 9 | N | You have a certain amount of talent, and you can't really do much to change it |
| 10 | N | Your talent in an area is something about you that you can't change very much |
| 11 | P | No matter who you are, you can significantly change your level of talent |
| 12 | N | To be honest, you can't really change how much talent you have |
| 13 | P | You can always substantially change how much talent you have |
| 14 | N | You can learn new things, but you can't really change your basic level of talent |
| 15 | P | No matter how much talent you have, you can always change it quite a bit |
| 16 | P | You can change even your basic level of talent considerably |

Transformational Leadership and Financial Performance: The Mediating Role of Corporate Reputation

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Abstract

This quantitative research study seeks to determine the effect of the transformational leadership style on the reputation and financial performance of manufacturing companies listed on the Indonesia Stock Exchange. Data was collected via a survey questionnaire distributed to manufacturing firms and processed using a structural equation model. The results indicate that transformational leadership can significantly improve a company's reputation, which in turn can improve its financial performance since company reputation was found to mediate the relationship between transformational leadership and financial performance. Of the four key dimensions of transformational leadership, intellectual stimulation was found to be the most powerful indicator of style. Transformational leadership, however, was found not to have a significant direct impact on financial performance and could even worsen it. These findings give the implication that companies must pay attention to how they implement transformational leadership as in the absence of a strong corporate reputation, this style of leadership alone will not improve their financial performance. This research is expected to be helpful to companies engaged in the manufacturing sector.

Keywords: Transformational Leadership, Corporate Reputation, Financial Performance.

1. Introduction

One of the key assets of an organization is its reputation (Choi & Wang, 2009). In order to increase profitability, a company must have a good reputation (de Salles Vance & de Ângelo, 2007). Corporate reputation is the primary source of organizational performance. It has a strong relationship with financial performance (Roberts & Dowling, 2002; Eberl & Schwaiger, 2005). This is ample evidence in the relevant body of literature that a good corporate reputation among stakeholders provides benefits in the form of higher customer retention (Deslandes, 2011), increased repurchase (Preece, Fleisher, & Toccacelli, 1995), higher revenues (Rajan, Zingales, & Kumar, 2005; Shapiro, 1983), which leads to lower costs thanks to reduced capital cost (Beatty & Ritter, 1986). Fombrun (1996) defined corporate reputation as a network of affective or emotional reactions from consumers, investors, employees, and the public to the good or bad, strong or weak name of a company. Employees' positive reaction to the company is especially helpful in building and protecting its corporate reputation since they are seen as a credible source for external stakeholders (Grunig, Grunig, & Dozier, 2003; Men, 2011). According to Men and Stacks (2013), employees build their own information and dialogue networks on social media and talk about the company both inside and outside.

However, in order to benefit from a positive employee perspective, the company needs to have an appropriate leadership style (Eberl & Schwaiger, 2005). One transformational leadership style shown to have a positive effect on employee perception of organizational reputation is transformational leadership, not only directly but also indirectly, through employee empowerment (Eidson & Master, 2000; Roberts & Dowling, 2002). For one, adopting a transformational leadership style manifests itself in the way leaders communicate a shared vision and high-performance expectations, act as role models, and encourage collaboration among employees to achieve common goals (Bass, 1999; Masa'deh et al., 2016). Transformational leaders promote new perspectives and novel ideas, and seek quality relationships with their employees, showing concerns for their personal feelings and well-being, thereby directly fostering a favorable employee's overall perception of the organization and enhancing its reputation and ability to face changes (Men & Stacks, 2013). Moreover, transformational leaders have the ability to motivate their employees, stimulate their creativity, and increase their desire to work effectively; all of which ultimately improving the company's financial performance (Uddin et al., 2014).

Recent studies about the relationship between transformational leadership and financial performance, however, have for the most part been inconclusive in that some determined that this leadership style has positive significant effect (Ocak & Ozturk, 2018; Son, Phong, & Loan, 2020) while other found no significant effect (Chammas & Hernandez, 2018). Some studies have also examined the relationship between corporate reputation and financial performance (Derun & Mysaka, 2018; Baah, Jin, & Tang (2020). Most of the latter, however, only examine these relationships separately. Only a few combined the relationship between transformational leadership and corporate reputation to examine their impact on financial performance. This research seeks to do just that. Focusing on companies in the Indonesian manufacturing sector, it groups transformational leadership and corporate reputation and investigate their combined effect on financial performance. The manufacturing sector is one of the most significant contributors to Indonesia's GDP. In 2018, it contributed 19.86% of the national GDP and 19.62% in 2019 (Ministry of Industry, 2019). As shown by the cumulative decline in the value of their stocks, recently, Indonesian public manufacturing companies, however, have been experiencing a deterioration of their financial performance, which is one of the indicators used to measure a company's success in generating profits (Arief, 2020). This study has the potential to contribute to a better understanding of the nature of the direct relationship between transformational leadership corporate reputation on the one hand and financial performance on the other..

2. Literature Review

- Leadership Theory

Leadership can be defined as the process of guiding or directing the behavior of others towards achieving a goal (Strukan, Nikolić, & Sefić, 2017). Leadership is always put forward as the basis for the success of an organization (). According to Zakeer Ahmed, Allah, and Irfanullah (2016), leadership theories include the "Great Man" theory, the trait theory, the contingency and situational theories, the style and behavior theories, the process leadership theory, and the transactional and transformational theories. The latter theories emerged in 1978 when Burns argued that leadership should be divided into two theories: transactional and transformational. In 2003, however, Burns claimed that leaders could not be both since transactional leaders seek to satisfy the basic needs of followers in exchange for achieving goals, whereas transformational leaders interact with followers in a mutually enriching environment that allows them to realize higher-order needs and their abilities to initiate the process of growth and self-transformation (Khanin, 2007; Gomes, 2014).

- Transformational Leadership

Transformational leadership is one of the most popular theories in leadership. The term 'transformational' leadership was first used by Wilkinson and Downton in 1974 and the theory, developed by Burn in 1978, as noted above. In a nutshell, it is a type of leadership whereby company

leaders participate in the activities of their subordinates in order to establish good communication and ultimately increase motivation and morale (Burn, 1978). It has also been described as a leadership style that integrates creative enlightenment, energy and persistence, intuition, and sensitivity to the needs of others to implement an integrated strategic culture (Bass & Avolio, 1993). Transformational Leadership has four essential factors (Bass & Avolio, 1993):

1. *Idealized Influence* – Leaders become role models for employees so that the actions of leaders become habits to be followed by employees.
2. *Inspirational Motivation* – Leaders have high expectations of a target and the leader is able to achieve that target by motivating his subordinates.
3. *Intellectual Stimulation* – Actions are taken by the leader to raise awareness of a problem and challenge subordinates to be innovative through questioning assumptions, reframing problems, and solving old problems through new approaches.
4. *Individualized Consideration* – Leaders focus on developing their subordinates by providing support, encouragement, and training.

- Corporate Reputation

Corporate reputation can be defined as the perceptions and feelings of stakeholders about the organization (Fombrun, 1996). It can also be seen as representing stakeholders' expectations of future actions by the organization based on previous experiences which also shape the future behavior of customers and employees towards the company (Kaplan & Norton, 2001). Corporate reputation has been attracting increasing attention from academics and experts (Graham & Bansal, 2007; Choi & Wang, 2009; Derun & Mysaka, 2018; Baah, et al., 2020). It has been determined to be capable of measuring a company's net affective image as perceived by customers, investors, employees, and the general public (Eberl and Schwaiger, 2005; (Kontan, 2019).). According to Fombrun and Gardberg (2000), corporate reputation can be described in reference to the following six key dimensions:

1. *Emotional Appeal* – how much the company is liked, admired, and respected.
2. *Products and Services* – Perception of the quality, innovation, value, and reliability of the company's products and services.
3. *Vision and Leadership* – Extent to which the company demonstrates a clear vision and strong leadership.
4. *Workplace Environment* – Perception of how well the company is managed, what it is like to work for, and the quality of its employees.
5. *Social Responsibility* – Perception of the company as a good citizen in its dealings with communities, employees, and the environment
6. *Financial Performance* – Perception of its profitability, prospects, and risk (Fombrun & Gardberg, 2000).

- Transformational Leadership & Corporate Reputation

A corporate personality, also known as corporate character or identity, is the core of an organization. The main aspects of corporate personality are corporate culture and how the organization develops strategies (Nguyen, Melewar, & Hemsley-Brown, 2019; Mickson & Anlesinya, 2019). To build a reputation, companies must develop a corporate identity that is central and internal to the company's culture, which represents the modes that the company uses to generate uniqueness and competitiveness (Roper & Fill, 2012). Corporate identity communicates three aspects of the organization to its stakeholders, namely what the organization does, how it does it, and what it is (Olins, 1989). According to Bernstein (1984), the different stakeholders' perceptions of an organization are known as its corporate image. Thus, corporate image can be described as the vision of the organization's external stakeholders and the way they perceive the company's personality (Liu, Ko, & Chapleo, 2017). The corporate image of an organization is the result of a combination of various factors, such as the beliefs, values, and attitudes that individuals or organizations have.

The characteristics, i.e., the beliefs, values, and attitudes of an organization will not be affirmed without the input of transformational leadership and branding efforts so that employees feel this is the best place to work. In that sense, transformational leadership is a leadership style in which the leader works with his employees to understand the changes needed, generates a vision through motivation and inspiration, and finally achieves the desired target with a committed workforce (Bloom & McClellan, 2016). This leadership style is committed to boosting the performance of subordinates, their motivation, and morale and generating a sense of employee identification with the organization (company branding) in order to produce high commitment, employee loyalty, good performance, and ultimately an excellent corporate reputation (Kia, Halvorsen, & Bartram, 2019). Therefore, based on the above, the following hypothesis has been developed:

H1: *Transformational Leadership has a positive effect on Corporate Reputation.*

- Corporate Reputation & Financial Performance

Reputation impacts the future performance of a company Roberts and Dowling (1997). A good reputation will positively affect financial performance. Using the Fortune Most Admired Company report, Roberts and Dowling (2002) determined in a follow-up study that companies with a relatively good reputation were in a better position to maintain superior earnings over time. Choi and Wang's (2009) study corroborated this finding as they concluded that companies with a reputation for excellence are equally able to maintain superior profitability in the long term and recover from a low financial performance position faster than companies lacking a good reputation. This proves that reputation affects financial performance indirectly, which can be observed by examining the company's ability to maintain above average profitability in the long term. Orlitzky (2005) found that the leading cause of the positive effect on the company's financial results was reputation. Data collected by Fombrun, Van Riel, and Van Riel, C. (2004) support this finding as they were able to show that companies that enjoy a good reputation outperform companies with a bad reputation in all financial measures over a five-year period. Davies et al. (2004) found that reputation accounts for about 3-7.5% of income each year and should not be considered an expense but an investment toward increasing income. Additional studies have confirmed the relationship between reputation and earnings in a variety of industries. Focusing on the airline industry, Graham and Bansal (2007) found that every one-point increase in an airline's reputation makes consumers willing to pay 18\$ more for a plane ticket. In another study in the pulp and paper sector, Bragdon and Marlin (1972) concluded that companies with the best records on pollution control and the environment were also the most profitable. The results of several other studies also support a positive relationship between corporate reputation and company financial performance. Thus, based on all these studies, the following hypothesis was formulated:

H2: *Corporate Reputation has a positive effect on the company's Financial Performance.*

- Transformational Leadership & Financial Performance

In their study on the financial performance of manufacturing and service companies in China, Son et al. (2020) determined that transformational leadership has an influence on their financial performance. They also found that transformational leadership affects financial performance more effectively than operational performance. Strukan et al. (2017) and Thomson et al. (2016) argued that transformational leadership has a positive impact on a company's financial performance because it motivates leaders to initiate and implement significant changes in the company meant to encourage employees to work better. Both studies are consistent with prior studies. For example, in their study on Turkish manufacturing companies, Ocak and Ozturk (2018) found a positive relationship between transformational leadership and company performance as did Arifa and Akram (2018) in a similar study in Pakistan. In addition, in their meta-analysis compiling 25 years of research, Wang et al. (2011) showed that transformational leadership is closely and positively related to organizational performance and needed for better organizational performance. Accordingly, the following hypothesis could be developed:

H3: *Transformational Leadership has a positive effect on the company's Financial Performance*

- Mediating Effect of Corporate Reputation

Corporate reputation is closely linked to transformational leadership, which is perceived as evidence of the ability of the company to articulate a clear vision and exhibit strong leadership (Fombrun & Gardberg, 2000). Various prior studies have confirmed the importance of the relationship between corporate reputation and financial performance (Graham & Bansal, 2007; Choi & Wang, 2009; Derun & Mysaka, 2018; Baah, et al., 2020). According to Kia et al. (2019), this leadership style is committed to boosting the subordinate performance by dint of being a role model and generating a sense of employee identification with the organization. Several prior studies have also confirmed the role of corporate reputation as mediator toward organization performance (Saeidi et al., 2015; Javed et al., 2020; Le, 2022). Therefore, based on all the above, the following hypothesis was formulated:

H4: *Corporate Reputation can act as a mediation in the relationship between transformational leadership and financial performance*

3. Methodology

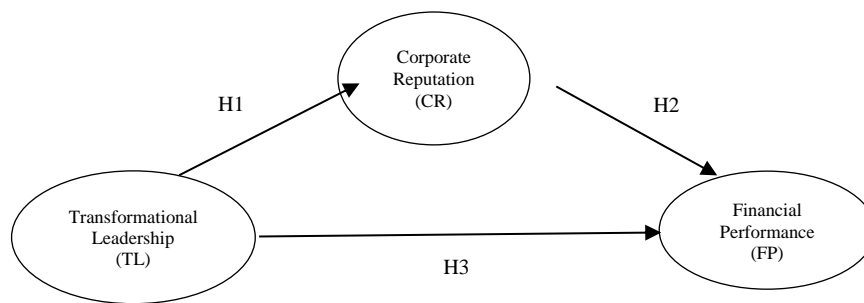


Figure 1: Conceptual Model (created by authors for this study)

- Research Design

This study uses a quantitative approach. The primary data was collected using a 5-point-Likert-scale survey questionnaire (point 1 = strongly disagree and point 5 = strongly agree). Non-Probability Sampling was utilized so that a sample could be assembled based on the following criteria: (i) having registered email and access to the web, (ii) email address must be valid, and (iii) the company returns the questionnaire to the researcher. These criteria were necessary because the questionnaire was distributed, using via email. Out of the total number of questionnaires distributed, 46 questionnaires were answered by the company's employees. 30 companies met the criteria. The reason 16 questionnaires could not be used was because the unit analysis in this study is a company and it turned out that several respondents from the same company returned a completed questionnaire.

- Measurement

This study selected measurement items based on a thorough review of the relevant strategy literature. Minor modifications were made to reflect the focus of this study on the three research variables, namely, Transformational Leadership as the independent variable, Financial Performance as the dependent variable, and Corporate Reputation as the intervening variable connecting the independent and dependent variables. The scale used to measure Transformational Leadership was adapted from Bass and Avolio (1993) and designed to determine whether organizational leaders embrace transformational leadership through 4 criteria: Idealized Influence, Inspirational Motivation, Intellectual Stimulation, and Individualized Consideration. To measure financial performance, the scale developed by Anees-Ur-Rehman, et al. (2018) was used. It consists of 4 items: profitability, sales growth, profit growth, and sales margin. Finally, the model developed by Frombrun, Gardberg, and Sever (2000) was used to

measure Corporate Reputation. The Reputation Quotient (RQ) was adapted. This model measures Corporate Reputation in the eyes of stakeholders using 6 factors: emotional appeal, products and services, vision and leadership, workplace environment, social and environmental responsibility, and financial performance.

4. Results and Discussion

The respondents were from 30 Indonesian manufacturing companies with total employee compositions as follows: 6 companies (20%) had less than 100 employees; 9 companies (30%) had 100-1000 employees; and 15 companies (50%) had more than 1000 employees. The total sample size follows Sekaran (2016) rule, which states that the sample size should be preferably 10 times or more as large as the number of variables in a study for multivariate research.

As to the respondents' profiles, it consisted of 19 men (63.33%) and 11 women (36.67%). 17 respondents (56.67%) were less than 30 years old; 11 respondents (36.67%) were 30-50 years old; and 2 respondents (6.67%) were more than 50 years old. In terms of seniority, 15 respondents had been working <5 years (50%), 5 between 5-10 years (16.67%), 6 between 11-20 years (20%), and 4 had been with the company for more than 20 years (13.33%). Table 1 shows the respondents' scores for each variable. Item CR/S&ER has the most significant mean value in the CR variable (4.33), which means that most of the manufacturing companies highly value their corporate reputation.

Table 1: Means, Range, and Standard Deviations

| Indicator | Total Mean | Range | SD |
|-----------|------------|-------|------|
| TL/II | 4.4 | 3 | 0.81 |
| TL/IM | 4.23 | 4 | 0.94 |
| TL/IS | 4.13 | 3 | 0.82 |
| TL/IC | 4.43 | 3 | 0.82 |
| CR/EA | 4.4 | 3 | 0.72 |
| CR/P&S | 4.57 | 2 | 0.57 |
| CR/V&L | 4.27 | 2 | 0.69 |
| CR/WE | 4.3 | 3 | 0.75 |
| CR/S&ER | 4.47 | 3 | 0.68 |
| CR/FP | 4.33 | 2 | 0.66 |
| FP/P | 3.97 | 3 | 0.81 |
| FP/SG | 4.03 | 3 | 0.93 |
| FP/PG | 4.0 | 3 | 0.87 |
| FP/SM | 3.93 | 3 | 0.87 |

To test the construct validity in this study, it is necessary to consider the convergent and discriminant validity. Convergent validity describes the extent to which the scale is positively correlated with other measures of the same construct, where the loading factor must be higher than 0.5 (ideally higher than 0.7). The data in Table 2 shows that almost all of the loading factors are more than 0.7, which means that the convergent validity of the data is excellent. Discriminant validity is used to measure the level of uniqueness of a construct compared to other constructs, in which the factor loading of the related

latent variables must be higher than the cross-loading of other latent variables. As can be seen in Table 2, the loading factor for each related indicator is higher than the loading factor for other constructs. Through the evaluation of convergent validity and discriminant validity, it can thus be concluded that the construct of this research is valid.

Table 2: Combined Loadings and Cross-Loadings

| | TL | CR | FP | Se | P value |
|---------|--------|--------|--------|-------|---------|
| TL/II | 0.903 | 0.171 | -0.05 | 0.117 | <0.001 |
| TL/IM | 0.919 | -0.059 | -0.076 | 0.116 | <0.001 |
| TL/IS | 0.931 | 0.019 | 0.074 | 0.115 | <0.001 |
| TL/IC | 0.950 | -0.124 | 0.048 | 0.114 | <0.001 |
| CR/EA | 0.321 | 0.711 | -0.102 | 0.128 | <0.001 |
| CR/P&S | -0.315 | 0.681 | -0.164 | 0.130 | <0.001 |
| CR/V&L | -0.384 | 0.681 | -0.164 | 0.130 | <0.001 |
| CR/WE | 0.273 | 0.770 | -0.242 | 0.125 | <0.001 |
| CR/S&ER | -0.164 | 0.826 | -0.129 | 0.121 | <0.001 |
| CR/FP | 0.229 | 0.761 | 0.398 | 0.125 | <0.001 |
| FP/P | -0.276 | 0.225 | 0.817 | 0.122 | <0.001 |
| FP/SG | 0.187 | -0.223 | 0.942 | 0.114 | <0.001 |
| FP/PG | -0.057 | 0.008 | 0.889 | 0.117 | <0.001 |
| FP/SM | 0.107 | 0.020 | 0.930 | 0.115 | <0.001 |

The results of the research reliability test are reported in Table 3, which shows that each variable has a composite reliability value and Cronbach alphas above 0.7. This means that each dimension used in measuring the variables of this study is reliable even though it is used several times. Therefore, every question used in obtaining data proved capable of being used as a measuring tool for this research.

Table 3: Correlations among Latent Variables with sq.rts. of AVEs, Composite Reliability, and Cronbach’s Alpha

| | TL | CR | FP | Composite reliability | Cronbach’s alpha |
|----|-------|-------|-------|-----------------------|------------------|
| TL | 0.926 | 0.697 | 0.289 | 0.960 | 0.944 |
| CR | 0.697 | 0.741 | 0.532 | 0.879 | 0.834 |
| FP | 0.289 | 0.532 | 0.896 | 0.942 | 0.917 |

The effect size for the path coefficient value in Table 4 shows a value higher than 0.02, which means that the value is quite relevant. All the research variables indicate that the TL-FP relationship has the lowest effect size value, which is 0.054. The test results and the model of the relationship between the variables of this study can be seen in Figure 1.

Table 4: Effect Size for Path Coefficients

| | TL | CR | FP |
|----|-------|-------|----|
| TL | | | |
| CR | 0.510 | | |
| FP | 0.054 | 0.376 | |

Table 5 provides information on the direct and indirect relationships between the research variables. Regarding the direct relationship, it is known that the relationship between Transformational Leadership and Corporate Reputation is positive and significant ($P < 0.01$), thus supporting H1. This shows that if a manufacturing company implements transformational leadership, it can significantly increase its corporate reputation. Thus, these results are in line with previous research by Roper and Fill (2012), in which Transformational Leadership is one of the leading drivers of increasing Corporate Reputation.

The relationship between Corporate Reputation and Financial Performance is positive and significant ($P < 0.01$), so H2 is accepted. These results are consistent with Roberts and Dowling’s (1997) study, in which it was determined that a good corporate reputation positively affects future financial performance.

In addition, Figure 2 indicates that Transformational Leadership has a negative and insignificant effect ($P = 0.23$) on Financial Performance. This finding aligns with previous research by Onagh & Hazimi (2018) and Doan et al. (2019) who reported a negative significant correlation between transformational leadership and its effects on financial performance. The indirect relationship between TL-CR-FP has a significant positive effect with a value of $= 0.415$ and $p < 0.001$. Therefore, it can be concluded that CR can be a medium that helps TL in increasing FP, thus supporting H4.

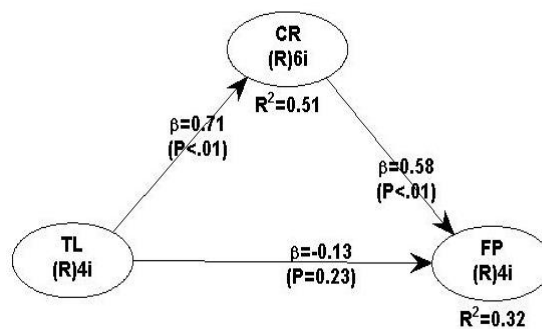


Figure 2: PLS-based Structural Equation Model

Table 5: Inner Model Results

| | Direct Effect | Indirect Effect | Total Effect |
|---------|------------------|----------------------------------|------------------|
| TL → FP | -0.127 (p=0.23) | TL→ CR → FP 0.415 (p < 0.001) | 0.288 (p =0.039) |
| TL → CR | 0.714 (p<0.001) | - | 0.714 (p <0.001) |
| CR → FP | 0.581 (p <0,001) | - | 0.58 (p <0.001) |

The results indicate that transformational leadership has no significant and negative impact on financial performance ($P = 0.23$), so H3 was rejected. This is consistent with Doan et al.'s (2019) findings that when employee awareness in the company is low, transformational leaders will worsen the company's financial performance. However, on the other hand, a positive and significant relationship ($P < 0.01$) is seen in the relationship between transformational leadership and corporate reputation. This result is consistent with previous research by Kia et al. (2019) who determined that transformational leaders are generally committed to boosting their subordinates' performance, motivation, and morale in order to produce high commitment, employee loyalty, good performance, and ultimately a good corporate reputation. Thus, H1 is accepted. In addition, the relationship between corporate reputation and financial performance also shows positive and significant results, which means that H2 is also accepted. This is in line with previous research, most notably Orlitzky (2005), who found that the main cause of a positive effect on the company's financial results is reputation. Thus, it can be concluded that the implementation of transformational leadership to manufacturing companies in Indonesia has the capacity to ensure a positive assessment of corporate reputation, whereby a good corporate reputation will end up improving the company's financial performance and maintaining long-term profits.

As the above discussion suggests, the influence of corporate reputation in improving financial performance is primarily determined by the effectiveness of the implementation of transformational leadership. A corporate reputation that can help maintain superior profits in the long term can only have a positive effect on a company's financial performance as long as the latter is able to communicate its identity to every stakeholder and therefore create a positive perspective on the company. The stakeholder perspective on an organization – which is known as corporate image, as explained earlier – is the result of the beliefs, values, and attitudes that each stakeholder has towards the company. They can be formed through the implementation of an effective leadership style, one of which being transformational leadership. As is now clear, this is a leadership style in which the leader invites employees to work together in building a vision and mission in order to achieve the desired target. This type of leadership indirectly generates a sense of employee identity within the organization, enhances commitment, loyalty, productivity, and leads to a good corporate reputation. When leaders fail to implement transformational leadership, a good corporate reputation is difficult to create and not optimal in improving financial performance. In summary, these findings indicate that the successful implementation of transformational leadership increases corporate reputation, and corporate reputation is capable of improving financial performance. Therefore, companies must implement transformational leadership in order to create a good corporate reputation and ultimately help the company improve its financial performance.

5. Conclusion

In light of the declining GDP contribution of the manufacturing sector in Indonesia, it is clear that manufacturing companies must make take steps to improve their financial performance. As this study has determined, transformational leadership has the capacity to improve financial performance with the help of corporate reputation as an intervening variable. Indeed, transformational leadership has a significant positive impact on corporate reputation and corporate reputation significantly and positively impacts on financial performance, as was hypothesized in H1 and H2. The results related to the relationship between transformational leadership and financial performance, however, showed an opposite result, therefore H3 was rejected. Thus, while manufacturing companies in Indonesia can adopt a transformational leadership style, thereby substantially enhancing their corporate reputation and improving their financial performance and maintaining long-term profits since company reputation can act as a mediation in the relationship between transformational leadership and financial performance, this is not given, far from it.

Transformational leadership was found not to have a significant direct impact on financial performance and in fact could worsen it. In other words, since adopting a transformational leadership style cannot directly influence financial performance, transformational leadership – unless it positively impacts corporate reputation – will not in and of itself necessarily improve the financial performance of those manufacturing companies. But, as this study made it abundantly clear, transformational leadership can improve a company's reputation which in turn can improve the company's financial performance. These companies should therefore focus on creating or maintaining a strong corporate reputation in order to create sustainable profits and improve their financial performance. The reason this study has not been able to establish that transformational leadership has a significant positive impact on Financial Performance is due to following limitations: (i) The sample obtained is relatively limited, 46 questionnaires out of which only 30 questionnaires met the criteria; (ii) The sample is only limited to one industrial sector, namely the manufacturing industry, so there is no variation in the sample; and (iii) The limitations of the analysis model are not differentiated based on the characteristics of the company. Therefore, the researchers recommend that in future studies the number of research data is further reproduced and expanded with samples of company data from various types of industries. In addition, future research could be carried out using control variables, such as company size in order to identify differences in the effect of transformational leadership style on small, medium, to large companies.

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Organizational Resources and Work Engagement as Related to New Ways of Working at Private Universities in Bangkok, Thailand

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Abstract

In the wake of the breakout of the Covid-19 pandemic, new ways of working, such as remote work, have been introduced on a large scale across all sectors, including in higher education. Focusing on faculty and staff members employed at two private universities in Bangkok, Thailand, this quantitative research study seeks to determine the impact of organizational resources, which includes training, autonomy, and technology support, on work engagement, which consists of factors, vigor, dedication, and absorption, in the context of remote work with gender, age, experience, and job tenure acting as control variables. Stratified sampling was used to determine the sample size. 329 valid responses were collected and analyzed using SPSS 21. Multiple linear regression was used to analyze the coefficients. The results indicate that organizational resources can strongly affect work engagement as related to the new ways of working. Institutions of higher learning need to provide sufficient organizational resources such as training and technology support to faculty and staff members to ensure their smooth transition from the traditional ways of working to the new ones and maintain a high level of work engagement. The managerial implications of this study can benefit organizations, including those in sectors other than education.

Keywords: Organizational Resources, Work Engagement, Remote work, New Ways of Working.

1. Introduction

With the Covid-19 pandemic and the need for social distance as mandated by the regulations adopted at the time, new ways of working have been adopted by many organizations, including in the higher education sector. In many ways, the pandemic has been an accelerator of trends. Practices that were emerging but had received little acceptance by consumers and users prior to the outbreak suddenly appeared to be the only appropriate responses to the spread of the virus. For example, lecturers long used to the traditional face-to-face teaching method had been reluctant to endorse online teaching. Older people may have been unwilling to shop online or

have food delivered to them, but with government-imposed lockdowns, they had no choice. Acceptance of such practices jumped as people adapted and, in the process, ended up adopting new technologies and new ways of shopping, working, and teaching. The working environment and working styles changed as a result as employees had to work from home and teachers lecture from home. The new ways of working, referred to as ‘remote work’ or ‘online work’ may be here to stay and replace at least in part the traditional face-to-face way of working. In switching to different working styles, organizational resources and support are essential for a smooth transition. This has been all the more the case as the new ways of working, while providing benefits and convenience to employees (for example, more time spent with the family, less fatigue not having to commute, etc) also have their limitations. They may adversely affect work engagement, which can then be less intense than when working on-site. With the need for employees to adapt to new working styles, work procedures, methods, and ways of interacting with one another might affect employees’ work engagement as well.

Take universities, the organizations at the core of this article. They had no choice but to require lecturers to use different teaching platforms to deliver lectures to students. For faculty – and staff members – ways of teaching students, teaching outcomes, and student assessment became quite different from what they had hitherto known and experienced. How organizational resources were used to transit to these new working styles became critical to its success and the sustained work engagement of all university employees. Work engagement is widely discussed in organization management (Bakker & Albrecht, 2018; Duque et al., 2020), human resource management (Alzyoud, 2018; Aybas & Acar, 2017; Sekhar, Patwardhan, & Vyas, 2018), leadership (Amor, Vázquez, & Faíña, 2020; Decuyper & Schaufeli, 2020), and strategic alignment (Ghonim et al., 2020; Simon, Breidahl, & Marty, 2018). Various factors have been shown to influence it, most notably organizational resources (Kodden & Hupkes, 2019; Salmela-Aro & Upadyaya, 2018), working environment (Teo, Bentley, & Nguyen, 2020; Wood et al., 2020), and supervisor support (Decuyper & Schaufeli, 2020; Ibrahim, Suan, & Karatepe, 2019). Previous research on organizational resources and working engagement, however, mainly focuses on human resources management (Saks, 2022), the hotel industry (Asghar et al., 2021; Grobelna, 2018), and the health care industry (Zhang et al., 2018). Research studies on organizational resources and work engagement in higher education remain limited. This is especially the case with private universities in Thailand.

This research seeks to fill this gap and contribute some ideas to universities on how to transit into the new-ways-of-working era smoothly. Specifically, it aims to determine how organizational resources affect faculty and staff members’ working engagement when switching to new ways of working. It focuses on the work engagement of lecturers and staff members at universities that have been integrating the new ways of working – remote work and online work – in their operations as influenced by gender, age, and job tenure. Out of the 60 Bangkok-based universities listed on Free Apply (2022), 27 are private (Universities-in-the-World, 2022) and located in six different districts. Six (one per district) are the focus of this research. Additionally, this study aims to provide insights into what private universities should concern themselves about to maintain and improve the working engagement of their employees.

2. Literature Review

- *Work Engagement*

This research is based on Kahn's (1990) work engagement theory. Kahn (1990) defined engagement as "the simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence (physical, cognitive, and emotional) and active, full performances" (p. 700). Work engagement is critical for an organization to engage its employees to be performant. It is also part of successfully leading the organization to achieve its goal. Kahn's (1990) work engagement theory has been widely applied in different fields and industries, such as leadership (Decuyper & Schaufeli, 2020), nursing workforce (Decuyper & Schaufeli, 2020), and education industry (Perera et al., 2018).

Work engagement drives personal energy into physical, cognitive, and emotional energy (Gerards, de Grip, and Baudewijns (2018). It has been determined to be an antecedent of work motivation, work satisfaction, and work performance (González-Gancedo, Fernández-Martínez, & Rodríguez-Borrego, 2019; Motyka, 2018). It has also been found to be related to empowerment and autonomy and as such to increase employees' work engagement (Maden, 2015). Moreover, since it generates a sense of fulfillment in one's work, it is synonymous with vigor, dedication, and absorption (Schaufeli et al., 2002). Vigor in this context refers to having a high degree of energy and being mentally adaptable at work, willing to put in the effort, and persevering even in the face of difficulties. As to dedication, it is to be understood as having sense of enthusiasm, pride, meaningfulness, inspiration, and willingness to face challenges at work. Finally, absorption refers to the capacity to be fully concentrated on one's work, enjoy one's work, and not be aware of the passing of time.

- *Organizational Resources*

Organizational resources are related to employee experience upstream in the organization (Ahmed & Othman, 2017). Organizational resources can also be defined as a system level in terms of physical and psychological facets in the organizational environment (Simon et al., 2018). According to Demerouti et al. (2001), organizational resources contribute to the functioning of a firm and its achieving its organizational goals. They can also reduce unnecessary job demands, keep extra costs under control, and motivate employees' growth, learning, and development (Salanova, Agut, & Peiró, 2019). Moreover, they directly and indirectly influence job resources, organizational climate, and work engagement (Jaeyoung, Rocco, & Shuck, 2020). With the change of the working style from on-site face-to-face work to online distance working, three dimensions of organizational resources have become even more prominent: training, autonomy, and technology (Salanova et al., 2019). To begin with, firms need to provide training to help and support their employees to adapt to the new ways of working as it is critical for workers to feel that they are not on their own and are given opportunities to develop themselves. They also need to ensure that they give employees autonomy and flexibility in deciding how to manage their own tasks and develop their own working style working from home rather than micromanage every step. Technology is an equally critical dimension as people must use the online platforms, tools, and devices when working from home. In the case of lecturers and staff members, this includes emails, Microsoft tools, online meeting programs, online teaching programs, to name a few. Moreover, it is critical that the technology provided be easy-to-use, useful, and efficient.

- Organizational Resources and Work Engagement

Sufficient organizational resources positively influence work engagement. This is especially the case with supervisors and co-workers' support (González-Gancedo et al., 2019). Moreover, research shows that organizational physical resources, such as a firm's working atmosphere, working environment, and working conditions and psychological resources, such as mental support by supervisors and recognition by co-workers can sustainably increase employees' engagement (Biggs, Brough, & Barbour, 2014; Kodden & Hupkes, 2019). The following hypothesis can therefore be developed:

H1: *Organizational resources impact work engagement as related to new ways of working at private Bangkok-based universities.*

- Gender

Given the differences between males and females and the traditional roles they have been ascribed in society, gender is one of the most important control factors in research. In societies where the traditional way of thinking still prevails, males are supposed to have more power and be the main source of family support, whereas females' main role is to take care of the kids and family (Brimeyer, Perrucci, & Wadsworth, 2010). Moreover, there is a great body of research on gender differences and gender discrimination in the workplace (Lee & Eissenstat, 2018; Metin Camgoz et al., 2016; Sia, Sahoo, & Duari, 2015). Job demands and work engagement are found to be different between the two genders. However, with the advance of new technologies making many tasks far less physically demanding, women have been playing a greater role in the employment market. Working styles are changing as is work engagement in relation to gender. Thus, the following hypothesis can be articulated:

H2: *Gender is associated with work engagement as related to new ways of working at private Bangkok-based universities.*

- Age

Age is also a common control variable. Different age groups have different educational backgrounds and experiences. This is especially the case today as, when the youngest generations were born (generation Y and generation Z), information technology (IT), the internet, and various other electronic devices already existed. They take new technologies for granted and readily accept them and are swift to learn the latest developments. Older generations, on the other hand, may find learning new technologies more challenging and not learn as fast as the young ones. Moreover, Hoole and Bonnema (2015) found that different age group has different work engagement levels. According to Huber and Schubert (2019), the younger age cohorts have more passion and energy to learn new things as compared with older or senior groups. They are more willing to engage in their tasks. Since in this research, faculty members and employees need to apply new ways of working and use different platforms and electronic tools to conduct online work, some might learn and get used to the new systems faster. Older employees who are used to more traditional ways of working may require more time and effort to be truly cognizant of new technologies. The following hypothesis can thus be proposed:

H3: *Age is associated with work engagement as related to new ways of working at private Bangkok-based universities.*

- Job Tenure

Job tenure is frequently mentioned in studies on work engagement (Bayona, Caballer, & Peiró, 2020), job satisfaction (Abate, Schaefer, & Pavone, 2018), and organizational commitment (Baek, Han, & Ryu, 2019). There is a positive relationship between job satisfaction and job tenure (Whitney, 2017). Moreover, the longer the job tenure of employees, the greater their knowledge of the work, and experience in the organization. Newly hired employees typically need more time to get used to a new job, new environment, new supervisors, and new co-workers and more input from employees employed with for the organization for a longer time. However, if the nature of the job is routine and the same day after day, there will be no new incentives and motivation and work engagement is likely to recede (LaFave, Lewis, & Smith, 2016). On the other hand, if each day brings new experiences, work engagement is likely to be positively influenced. Thus, the hypothesis can be formulated:

H4: *Job tenure is associated with work engagement as related to new ways of working in private universities.*

Based on the all the concepts discussed above, the following conceptual framework was developed:

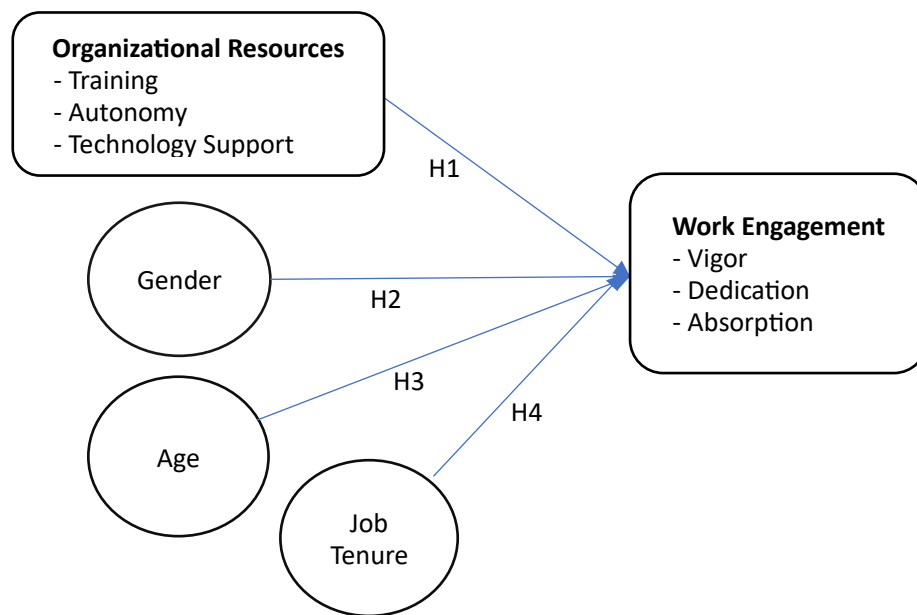


Figure 1: Research Conceptual Framework (created by authors for this study)

3. Methodology

Sample and Data Collection Procedure

Participants of this study are faculty and staff members working at two private universities in Bangkok. As previously mentioned, there are 27 private universities operating 6 different districts in Bangkok (Universities-in-the-World, 2022). The stratified sampling method was used in this study to randomly select universities in the 6 districts in Bangkok – one university per district. Data was collected through a self-administrated survey questionnaire. The researchers contacted each university to get permission to send online questionnaires to faculty and staff members. 1,000 surveys were sent to the targeted universities. There were 336

respondents. Since 7 responses were missing data, only 329 were deemed to be valid, which represents a 32.9 percent response rate. Information on the participants demographics is summarized in Table 1.

Table 1: Descriptive Characteristics of Participants

| | |
|---------------------------------------|--|
| Gender | Male: 162 (50.8%) Female: 167 (49.2) |
| Age | 18-25 years old: 22 (6.7%) 26-35 years old: 146 (44.4%) 36-45 years old: 40 (12.2%) 46-55 years old: 56 (17%) 56-65 years old: 57 (17.3%) 66-75 years old: 6 (1.8%) More than 76 years old: 2 (0.6%) |
| Job Tenure in the Organization | Less than 1 year: 56 (17%) 1-3 years: 113 (34.3%) 3-5 years: 64 (19.5%) 5-7 years: 24 (7.3%) 7-10 years: 41 (12.5%) More than 10 years: 31 (9.4%) |

- *Measurement*

As explained above, in this study, organizational resources include three dimensions: training, autonomy, and technology support. The way to measure training and technology was developed by Brown and Mitchell (1991) and the autonomy measurement scale by Sekhar et al. (2018). Training contains 4 items, autonomy 3 items, and technology 4 items. As to the measurement of work engagement, which also includes three dimensions, vigor, dedication and absorption, it was developed by Salanova et al. (2003). Vigor contains 6 items, dedication 5 items, and absorption 6 items. All the questions related to organizational resources and work engagement were rated using five-point Likert scale, ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”).

- *Data Analysis*

This research applied SPSS version 19 to conduct the data analysis. The demographic characteristics of the respondents are shown in table 1. Regarding the validity of the factor analysis of the scales, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is equal to 0.914, and the P-value of the significance level of Bartlett’s test is less than 0.001. According to Cooper, Schindler, and Sun (2006), a KMO value greater than 0.7 and Bartlett’s test p-value less than 0.05 are good, which means that the validity of the Confirmatory Factor Analysis (CFA) is good enough. At this stage, this research validity of the scales is acceptable.

Table 2: Correlations among Variables, Internal Consistency, and Convergent Validity

| Variables | Cronbach's Alpha | Composite reliability coefficient | Gender | Age | Job Tenure | Training | Autonomy | Tech | OR | Vigor | Dedication | Absorption | WE |
|------------|------------------|-----------------------------------|--------|-------|------------|----------|----------|----------|---------|---------|------------|------------|---------|
| Gender | - | - | (1) | 0.045 | -0.02 | -0.011 | -0.096 | -0.155** | -0.094 | -0.105 | -0.117* | -0.095 | -0.119* |
| Age | - | - | | (1) | 0.469** | 0.053 | 0.044 | 0.033 | 0.048 | 0.059 | 0.017 | 0.048 | 0.045 |
| Job Tenure | - | - | | | (1) | 0.092 | 0.047 | 0.069 | 0.075 | 0.068 | 0.047 | 0.073 | 0.069 |
| Training | 0.763 | 0.920 | | | | (1) | 0.780** | 0.724** | 0.912** | 0.665** | 0.706* | 0.615** | 0.740** |
| Autonomy | 0.779 | 0.891 | | | | | (1) | 0.770* | 0.934** | 0.631** | 0.653** | 0.636** | 0.713** |
| Tech | 0.737 | 0.913 | | | | | | (1) | 0.900** | 0.731** | 0.688** | 0.675** | 0.779** |
| OR | 0.903 | 0.898 | | | | | | | (1) | 0.734** | 0.743** | 0.699** | 0.810** |
| Vigor | 0.81 | 0.960 | | | | | | | | (1) | 0.711** | 0.693** | 0.897** |
| Dedication | 0.792 | 0.924 | | | | | | | | | (1) | 0.720** | 0.910** |
| Absorption | 0.747 | 0.861 | | | | | | | | | | (1) | 0.884** |
| WE | 0.906 | 0.916 | | | | | | | | | | | (1) |

Remark: * $p \leq 0.05$; ** $p \leq 0.01$ Tech, technology; OR, organizational resources; WE, work engagement; Gender, dummy variable (“male=1; female”=0); Age (“18-25 years old=1; 26-35 years old=2; 36-45 years old=3; 46-55 years old=4; 56-65 years old=5; 66-75 years old=6; more than 76 years old=7”); Job Tenure (“Less than 1 year=1; 1-3 years=2; 3-5 years=3; 5-7 years=4; 7-10 years=5; more than 10 years=6”)

The reliability of the scale was tested using Cronbach’s alpha for internal consistency. Bell, Bryman, and Harley (2018) determined that a Cronbach’s alpha value greater than 0.7 is good for internal consistency. The details of Cronbach’s alpha and correlation results are shown in Table 2.

4. Results and Discussion

As can be seen in Table 2, all Cronbach’s Alpha factors are greater than 0.7, which indicates that the reliability and internal consistency are good enough as we just saw above. The composite reliability coefficient is used to assess the construct validity. According to Raykov (1998), the value of the composite reliability coefficient should be at a minimum of 0.7. As shown in Table 2, all factors of the composite reliability coefficient are greater than 0.7, which satisfies the requirement. The researchers applied an OLS simple regression to test the linear regression of organizational resources and work engagement in relation to the new ways of working. Details of the test are shown in Table 3.

Table 3: Simple Regression Analysis

| Model | Coefficients | | | | | | | | |
|--------------|-----------------------------|------------|---------------------------|--------|-------|---------------------------------|-------------|-------------------------|-------|
| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | | Collinearity Statistics | |
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound | Tolerance | VIF |
| Constant | 1.476 | 0.121 | | 12.232 | 0.000 | 1.239 | 1.714 | | |
| Gender | -0.03 | 0.028 | -0.035 | -1.081 | 0.281 | -0.085 | 0.025 | 0.949 | 1.054 |
| Age | 0.004 | 0.011 | 0.011 | 0.31 | 0.757 | -0.019 | 0.026 | 0.776 | 1.289 |
| 1 Job tenure | -0.001 | 0.01 | -0.003 | -0.092 | 0.927 | -0.02 | 0.018 | 0.771 | 1.297 |
| Training | 0.245 | 0.04 | 0.332 | 6.151 | 0.000 | 0.167 | 0.324 | 0.344 | 2.909 |
| Autonomy | 0.066 | 0.039 | 0.097 | 1.685 | 0.093 | -0.011 | 0.144 | 0.301 | 3.325 |
| Technology | 0.366 | 0.042 | 0.458 | 8.635 | 0.000 | 0.283 | 0.45 | 0.358 | 2.797 |

R²=0.677

Adjusted R² = 0.671

As shown in Table 3, the multiple regression analysis of gender, age, job tenure, and organizational resources in terms of training, autonomy, and technology affect work engagement. The beta coefficients of training ($\beta=0.245$, $p=0.000$), autonomy ($\beta=0.066$, $p=0.093$), and technology support ($\beta=0.366$, $p=0.000$) are all positive, which means the organizational resources in terms of training, autonomy, and technology support positively influence work engagement. Moreover, since the p-value of training and technology support is less than 0.05, it is statistically significant. However, the p-value of autonomy is equal to 0.093, which is greater than 0.05, which that this dimension is not significant. Still, since the two other dimensions of organizational resources are significant, H1 (Organizational resources impact work engagement as related to new ways of working at private Bangkok-based universities) is supported.

Regarding gender ($\beta=-0.03$, $p=0.281$), the beta coefficient of gender is negative, it was coded male=1, female=0, which means that compared with male respondents, female respondents have more influence on their work engagement. However, the p-value is greater than 0.05 and is not significant. Therefore, H2 (Gender is associated with work engagement as related to new ways of working at private Bangkok-based universities) is not supported. The next variable is age, ($\beta=0.004$, $p=0.757$), at this point, the beta is equal to 0.004 which is positive. This means that the older age groups have more impact on their work engagement. However, the p-value is greater than 0.05, an indication that it is not statistically significant; hence, H3 (Age is associated with work engagement as related to new ways of working at private Bangkok-based universities) is not supported. Finally, regarding job tenure ($\beta=-0.001$, $p=0.927$), since the p-value is greater than 0.05, it is not significantly influential, therefore, H4 (Job tenure is associated with work engagement as related to new ways of working in private universities) is also not supported.

In addition, the R square is 0.677 and the adjusted R square equal to 0.671, which means the independent variables can explain 67.1% of the dependent variable. The other 32.9% are influenced by other factors that this study did not cover. The Variance Inflation Factor (VIF) is used to detect multicollinearity. According to Hair (2009), the value of VIF should be less than 10 in order to conduct an unbiased estimation. Since the VIF values range from 1.054 to 3.325, which are lower than the standards, multicollinearity is not a major issue in this research study. This indicates that organizational resources in terms of training and technology support are essentially primary factors influencing faculty and staff members working at private universities, using new work styles. In other words, to make faculty and staff members adapt faster to these new ways of working, more training using technology to conduct online teaching or hybrid classes, and more technology support are the best ways to ensure a smooth transition from traditional working styles to new ways of working.

5. Conclusion and Recommendations

This research aims to investigate the work engagement of faculty and staff members of a Bangkok-based private university in relation to the new ways of working. The results indicate that organizational resources strongly influence work engagement. Of the three dimensions of organizational resources (training, autonomy, and technology support), training and technology support are the most significant influences on faculty and staff members' work engagement. These findings are consistent with prior research studies that tested and confirmed a similar direction in other sectors (Gerards et al., 2018; Salanova et al., 2017; Van Steenbergen et al., 2018). Work engagement for the purpose of this study, also consists of three dimensions, which are vigor, dedication, and absorption. Whenever universities decide to change the ways of working, either as they were mandated during the pandemic or to keep up with the changing times and technology in the coming years, organizational resources are critical to help faculty and staff members adapt to the new ways of working and the technology that support such work styles, maintain, or even increase their work engagement, and possibly enhance their performances. Apart from resistance to change, a common occurrence in most organizations, a fast-changing work environment, however, might frighten and frustrate some faculty and staff members, especially older ones, who may find it difficult or may lack the motivation to acclimatize themselves to the latest technological innovations; hence the need in such cases to

pay even more attention to the way organizational resources, first and foremost training and technology support, are used. These findings are in line with prior determinations that communication technology is critical to maintaining work engagement when people work remotely (Ter Hoeven et al., 2016). It is therefore, strongly suggested that private or public universities and organizations provide adequate training and substantial resources to employees before they switch from on-site traditional work style to off-site, hybrid, online distance work, or any other new ways of working that may emerge in the future when artificial intelligence becomes the norm rather than an exception as is the case today. This includes in particular providing organizational working platforms, online meeting platforms, internal working systems, to name a few. Chaudhry et al. (2017) found that training and development can significantly influence an organization's performance and work engagement and suggested that when an organization decides to change or adapt to a new work style or a new work environment, such as change should be accompanied by enough training to the employees to familiarize them with the new work conditions.

On the technology side, the stability and security of the systems, in particular data security, are crucial to ensure a successful switch to remote work. Organizations should provide internal real-time update systems and since some employees may not be good with computers, programs and platforms should be easy-to-use. Jokela (2010) found that technology's ease of use is positively related to work engagement and performance and ease of use of the technology also can reduce human errors and mistakes. Providing suitable autonomy to faculty and staff members is another important issue closely linked to new ways of working. Employees need autonomy. This includes the autonomy to let them decide how to perform their tasks, use their time, and micromanage themselves. This is critical to ensure employees' commitment and maintain robust work engagement. Finally, it goes without saying that future similar studies should be conducted in fields other than education as new ways of working, most notably working from home, are more likely to be developed in those industries.

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Workforce Expectations of the New Generation: A Case Study of Thai Social Science Pre-Graduates

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Abstract

In the aftermath of the COVID-19 pandemic, understanding the expectations of the new generation workforce (also known as ‘Generation Z’) has become a major concern for companies, large or small. This is especially the case in Thailand, where, due to a persistent low fertility rate, companies are experiencing a shortage of labor and fiercely competing for graduates. Focusing on social science pre-graduates and using a phenomenological approach, this qualitative study aims to investigate their work expectations. Semi-structured interviews were conducted with 8 groups of pre-graduates, each one with a different major in social science. A thematic analysis was conducted, and a new conceptual framework developed. The findings indicate that the Thai new generation value an empathetic and fair work environment. They also anticipate receiving psychological and physical support during onboarding in the form of two-way communication and mentoring and are extremely keen on maintaining a work-life balance. Moreover, they expect fairness in terms of workload distribution and compensation. The results of this study have implications for onboarding and new generation employee development, and the recommendations made can benefit both SMEs and larger firms.

Keywords: New Generation, Onboarding, Social Science Pre-Graduates, Workforce Expectations.

1. Introduction

The population aged 60 and above is expected to double worldwide in the next decades (WHO, 2019), causing many countries, including Thailand – which is the focus of this study, to gradually become aging or super aging societies and face labor shortages among other issues, (Krajňáková & Vojtovič, 2017;). While robots are expected to fill the gap, technology alone will not suffice (Truxillo, Cadiz, & Hammer, 2015). This has led some governments to contemplate, among other solutions, retiree reemployment (Chen, 2020). This also makes the new generation now entering the workforce an even more valuable asset, one whose capabilities must be nurtured. What the term ‘new generation’ refers to here is the emerging cohort born after 2000, more commonly known as ‘Generation Z’ and characterized by different technological expectations and distinct post-COCIV-19 behaviors (Oyster, 2022). It follows Generation Y. Given the dwindling workforce in many parts of the world as a result of decelerated birthrates and the demographic shift under way, it is especially critical to retain the new generation hires. This may be a real challenge though (Koleda, Ciemleja, & Strakova, 2022). For one, the new generation has more options (Ellis et al., 2014), For another, research indicates that the separation rate of the new generation has increased ten times compared with the baby boomer generation (Newman & Gopalkrishnan, 2020). In this context of cut-throat competition for qualified labor, it is therefore imperative to understand the expectations of the new generation workforce, which is precisely what this study seeks to do in relation to the Thai new generation.

Studies on activities related to newcomers, such as employee selection, onboarding, and retention plan, have been conducted in the past (e.g. Raeder & Gurtner, 2014; Matei, Abrudan, & Roman, 2016). They have, among other outcomes, shown the effectiveness of onboarding as a new employee development tool and its key role in employee retention. Most of them, however, zero in generations X and Y, who, as we just saw, are no longer considered to be the new generation. In some cases, the data used was also collected from an experienced workforce (Ellis et al., 2014). This makes prior studies focusing on previous generations by and large irrelevant in terms of the new generation's current practices. There is also a lack of research on the needs of the emerging new generation workforce in the context of Thailand. This is especially the case with regard to the social science-educated cohort, who, unlike health science graduates who need professional certificates before they can be hired, can easily change their career paths after graduation (Ito, Mitsunaga, & Ibe, 2020). Yet, retaining the new generation of employees has become a pressing issue (Koleda et al., 2022). Hence the necessity to investigate their expectations and determine the activities that would support their development and daily work, which is precisely what this research aims to do. Specifically, it seeks to address the following research questions:

RQ1: What are the expectations of the new generation workforce regarding the working environment?

RQ2: What development activities does the new generation workforce expect?

The findings will assist HR professionals regarding new generation employees' onboarding, development, and retention.

2. Literature Review

- *The New Generation*

There are various ways of categorizing generations, but one widely used method includes the following categories: Baby Boomers, Generation X, Millennials (also referred to as 'Generation Y'), and Generation Z.

- Baby Boomers, those born between 1946 and 1964, are known for their idealism, dedication to their work, and loyalty to their employers (Strauss & Howe, 1991).
- Generation X, those born between 1965 and 1980, are characterized by their self-reliance, adaptability, and independence as they have grown up at a time of economic instability (Lancaster & Stillman, 2002).
- Millennials, those born between 1981 and 1996, are often seen as diverse, optimistic, and tech-savvy as they are the first generation to have grown up with the internet and social media (Howe & Strauss, 2000).
- Finally, Generation Z, those born between the mid-1990s and the early 2010s, is the first generation of digital natives, often recognized for their entrepreneurial spirit, familiarity with technology, and eagerness for social change (Seemiller & Grace, 2016).

As noted in the introduction, in this study, the label 'Generation Z' has been replaced by the label 'the new generation'. This is because the age range of the Generation Z cohort has been defined differently in various studies, leading to confusion (Dolot, 2018). To avoid any misunderstanding and ambiguity, this study followed Singh and Dangmei's (2016) definition of those born in the 1990s and raised in the 2000s when digital media. It should also be noted that most of this new generation started to enter the labor market after 2022. All that said, it is important to keep in mind that the year range for each generation is somewhat indeterminate and can differ, depending on the source and academic professionals' interpretation. Previous research has frequently discussed the work expectations of newcomers in the labor market, particularly among Generation Y (Raeder & Gurtner, 2014). As Generation Y became more established in the workforce, Generation Z began to replace them in entry-level positions and

subsequently received increased attention in the career and HR development field (Singh & Dangmei, 2016).

- Onboarding

The onboarding process aims to introduce the organization's goals, values, policies, regulations, and work processes to new employees to help them feel welcome and quickly adapt to the new environment for high-performance delivery (Watkins, 2016; Bauer, 2010). It has been identified as an initial tool for employee development and its implementation has been linked to creating a conducive working environment (Bauer, 2010). The process involves more than simply providing employees with manuals as HR professionals, supervisors, and mentors play key roles in the onboarding process (Caldwell & Peters, 2018). While HR professionals are involved in strategic planning (Oramana, Unakıtana, & Selen, 2011), supervisors and mentors helped execute the plan (Cranny, Smith, & Stone, 1992; Oramana et al., 2011). Effective onboarding reduces turnover and enhances employee satisfaction (Caldwell & Peters, 2018). Although the onboarding process's design depends on organizational resources, Bauer (2010) proposed that an efficient onboarding process should adhere to the Four C's building blocks: Compliance, Clarification, Culture, and Connection. Table 1 briefly describes each block.

Table 1: The Four C's Building Blocks

| Building Block | Description |
|-----------------------|--|
| Compliance | Teaching employees basic rules and policies, tax payment, e-mail registration. |
| Clarification | Explaining work details, work scope, and expectations in terms of work outcome in order to help employees efficiently achieve their goals. |
| Culture | Encouraging employees to get a good sense of organizational norms, including subcultures and the core corporate culture. |
| Connection | Inspiring employees to build a good relationship with colleague and exchange helpful information to achieve work goals. |

Source: Bauer (2010)

Additional research on the Four C's building blocks determined that they are based on a psychological contract between an organization and its employees (Caldwell & Peters, 2018; Kumar & Pandey, 2017). Onboarding is thus involved in socialization, which, as argued by Raeder and Gurtner (2014), was a necessity for generation Y. Such socialization has been found to help reduce the anxiety and stress of new employees (Ellis et al., 2014). Moreover, building relationships and providing information encourage capable newcomers to strengthen their long-term relationships with other employees (Hillman, 2010; Maurer, 2019). Chen (2020) determined that communication and supportive relationships are necessary to complete the process. All these studies highlight the crucial role of psychological support in the onboarding process to reduce stress, build relationships, and improve employee satisfaction. Most of the previous research on employee expectations is based on data collected from newly recruited members of an organization. Only a handful of studies focus on the expectations of fresh graduates. Matei, Arbuden, and Roman (2016) concluded that the new generation had different expectations in the onboarding process, such as flexible time and salary expectations based on competency. Reader and Gurtner (2014) found that the new workforce equate satisfaction with self-development work, a feeling for ethics, and empathetic supervisors. In addition, according to Matei et al. (2016), training programs for newcomers are also required.

These findings and the recommendations made have been beneficial to employers, but they relate to generation Y. They may not be applicable to the new post-2022 workforce, especially to a social-science-educated workforce. While Dolot (2018) has described the needs of generation Z, they have not been conceptualized. The Covid-19 pandemic has modified to some extent expectations. As recent research suggests, this is for example the case with the Covid-19-induced practice of working from home (WFH); a major shift toward a work-from-anywhere (WHX) policy (Gibbs, Mengel, & Siemroth, 2021). WHX has been found to increase productivity by 4.4% in non-collaborating and non-coordinating IT jobs (Choudhury, Larson, & Yang, 2019). To date, there is, however, no conclusive report about its long-term efficiency in the social science career path.

3. Methodology

Given the aim of this research, a qualitative and phenomenological approach was deemed to be the most suitable approach to determine the Thai new generation work expectations (Creswell, 2007).

- Data Collection

The participants in this study were selected from the Thai new generation workforce. All of them were in their last year of study and planned to enter the corporate world upon graduation. All of them had taken management courses. So, they understood the roles of HR. As indicated in Table 2, their major was either in management, accounting, marketing, linguistics, hotel, aviation, laws, digital art, or multimedia. Some had professional experience through part-time job or internships/apprenticeships or both, but some had none.

Table 2. Participants' Major

| Major | Work Experience | Number |
|------------------------------------|-----------------|--------|
| Tourism, Hospitality, and Aviation | No Experience | 3 |
| | Internship | 4 |
| International Business Management | No Experience | 6 |
| | Internship | 4 |
| Digital and Multimedia | No Experience | 3 |
| | Internship | 2 |
| Linguistics | No Experience | 2 |
| | Internship | 1 |
| Law | No Experience | 2 |
| | Internship | 2 |
| Accounting and Finance | No Experience | 2 |
| | Internship | 1 |
| Marketing | No Experience | 6 |
| | Internship | 3 |
| General Management and Logistics | No Experience | 3 |
| | Experience | 3 |

All the students selected differed from workers in health care and wellness science in that no professional certificates were required from them to enter the workforce (Ito et al., 2020), which means they could easily change their career path after graduation. In short, they had choices. Data was collected in 2021, at which time the informants' average age was 21 years. Their social status and the name of the institutions they were about to graduate from was kept confidential. In addition, the data collected during the interviews was deleted after it was analyzed.

Information was collected using semi-structured interviews in Thai. Each group, one for every major in social science, was interviewed for approximately 40-45 minutes. The informants first had to prove at the beginning of the interviews that they understood the role of HR and organization systems. Once this requirement was satisfied, the interviews could continue. As shown in Table 2, there were 8 groups, corresponding to the 8 social science majors offered at the Bangkok-based university selected for this research study. After the interviews were transcribed into writing, the interviewees were asked to verify their answers, which were then translated into English by certified professionals.

The questions were separated into two distinct parts. The first part was meant to ensure that those interviewed had a clear understanding of HR and management team roles and included questions such as, for example, “What is the role of HRM in an organization, and how does it differ from the role of the management team?” and “How does the management team contribute to the onboarding process, and what are their key responsibilities?” The second part focused on their expectations regarding their future supervisors, HR, and the organization itself, and consisted of open-ending questions, such as for example, “As a new entrant, what do you expect from your future HR and the organization itself?” and “What do you expect from your future supervisors in terms of leadership style and management approach?”

- Data Analysis

The transcribed information was analyzed using thematic analysis, which involves iterative reading to understand the meaning of the context and identifying the word frequency. The information was later encoded, categorized in conceptualized relationships. Pinnegar and Daynes (2006) identified four items in qualitative research and narrative inquiry to be considered to prevent generalizing. They include: the relationships among participants, the move to words data, the focus on the particulars, and the recognition of blurred genres of knowing. The researcher used this bracketing method to mitigate bias and prevent generalizations during data collection and transcription. The narrative form enabled a new understanding. A thematic analysis was conducted subsequently to facilitate conceptualization.

4. Research Findings

Findings relating to the work environment are discussed first and those relating to onboarding discussed then.

- The Work Environment

The content of the interviews clearly indicate that the new generation workforce highly prioritizes empathy and a fair work environment. They expect the organizations and HR professionals to empathize with them and listed psychological support as one of their top concerns. The interviews show that they are apprehensive about the way they can assimilate into a new work environment. Unfamiliarity with the new work environment was identified as a major source of anxiety and prompted them to say that would ask to be given time to adjust. As one interviewee stated, *"All we need is empathy as we need time to learn."* Effective communication, both verbal and non-verbal, was also deemed to be crucial. The new generation graduates not only expect their mentors to treat them with respect, but as those majoring in multimedia explained, they also expect two-way communication: *"We are ready to share new generation fresh ideas and organizations should encourage and utilize our technological skills. On the other hand, we expect the organization to share knowledge with us as well."* Interviewees with a linguistics major emphasized the need *"to talk with the supervisors and colleagues and build a relationship {...} allowing us better learning,"* a view that echoed the general sentiment among interviewees that effective communication and positive relationships are critical in facilitating the adjustment of the new generation workforce to a novel work environment.

Full consideration of all these factors was particularly critical since some of the informants reported struggling with symptoms of depression. These results align with Caldwell and Peters (2018). study, in which it was determined that psychological support, most notably, the expectation of being valued as a person, was the type of environment desired by new employees. Another significant concern for the new generation workforce is fairness in the workplace. Fairness here is to be understood as referring to an equitable workload distribution and fair entry-level salary. The perception of one interviewee with work experience in a service-related field captures the essence of their general concerns: *"We have heard that newcomers must inarguably take responsibilities that no one else in the organization wants to handle. If I had to face such a situation, I would feel miserable."* While they recognize that their salary will be low at first, they expect a reasonable workload; one that enables them to keep learning and pursue personal interests. Most informants indicated they would leave the organization within a year if they were subjected to an unfair workload.

Only a few said they would stay until they secure a new job. The interview outcomes reflect the new generation's perceptions of contemporary work practices. The COVID-19 pandemic and the drastic measures that accompanied the need for social distance caused a shift in their behavior. They are familiar with remote communication. In summary, the new generation anticipates a workplace that fosters psychological well-being and personal support, emphasizes empathy, facilitates adjustment to a new work environment, and provides learning prospects. The future workforce also prioritizes mental health. In addition, they expect an equitable and reasonable workload. This is their definition of a fair work environment.

- Activities Promoting the Workplace: Onboarding

As new entrants, the new generation expect organizations to (i) empower creativity, (ii) train and mentor them, (iii) ensure two-way communication, (iv) provide work-life balance, and (v) offer fair compensation and benefits. Fulfilling these expectations would contribute to their perception of an attractive work environment.

(i) Empowering Creativity

The information provided in the interviews show that the new generation workforce is confident in its creativity and technological abilities. As one interviewee stated: *"While we as the new generation may not be very experienced, this makes us think outside the box. Our creativity can make up for our lack of experience."* All the participants with an art major, all of them with experience with part-time jobs, provided the same insights regarding the empowerment of creativity, indicating that *"giving the new generation opportunities will encourage them to work, make them feel relaxed, and make them want to go to work."* Even though some of those interviewed did not directly mention creativity, they nevertheless pointed out their ability to handle new technologies, stating that they would be happy to *"exchange information and provide directions on how to use new technologies if supervisors gave them the opportunity and space to do so and share their opinions."* Some of them also mentioned that they have skills in operating online businesses, which may benefit the organization. The new generation workforce understands that their creativity would be further enhanced with the help, support, and understanding of their future supervisors and HR professionals. A group majoring in multimedia and cinematic art with internship experience reported that they *"Were left working [on their own], tried and made some mistakes, but were nevertheless harshly criticized,"* adding in the same breath that *"the working environment was terrible."* Similarly, some management majors acknowledged that they *"were told to stop because [they] were thinking outside the box."* The new generation aspires to receive encouragement and be shown empathy and support, not be admonished for their creativity.

(ii) Training and Mentoring

During the interviews, it was observed that the new generation workforce appears quite confident about their creativity but at the same time concerned about not being accepted. This is in line with the preceding comments. They want to be treated fairly and “*are afraid of not being accepted.*” This is why, according to them, they “*want to share [their] opinions and show their confidence in [their] skills.*” Almost all of them expect to receive training and mentoring, stating that their first supervisor is like their first teacher in the real world. As the new generation workforce in the management field stated, “*We need mentoring about working with others and reacting toward seniors.*” This sentiment was echoed by interviewees with other majors, who believe that the sink-or-swim method is not a suitable onboarding method. As one of them put it, “*if we were abandoned, we would feel lost as we lack experience.*” The new generation workforce also expressed their need for help understanding the benefits and compensation system, which they said takes time to learn. In summary, the new generation workforce is rather confident about their creativity and skills but fears that these will not be truly valued and respected. They nonetheless also expect to be trained and mentored, especially in working with others and reacting toward seniors. They believe organizations must provide guidance and support during onboarding to prevent them from feeling abandoned and lost.

(iii) Ensuring Two-Way Communication

The new generation workforce expressed concerns about the lack of communication and guidance which they believe they may experience as they seek to acclimate themselves to their new workplace. Specifically, they “*want to feel welcome and encouraged to ask questions and be treated based on rational judgment rather than emotions or cliches.*” They would like to have mentors, either supervisors or HR professionals, who can offer guidance and provide personal consultations on issues such as mental health. The law and business administration’s future workforce acknowledged the stress from learning in a new environment and emphasized the need for friendly companions or mentors. In their opinion, effective two-way communication and respectful onboarding are critical elements of an employee development plans as they would substantially help to alleviate the stress associated with adjusting to a new environment and provide psychological support. One informant noted, “*Communication would relieve tension.*” In summary, the new generation workforce requires effective communication and guidance, as well as mentors and personal consultations to help them adjust to their new environment.

(iv) Providing Work-Life Balance

It is quite clear from the interviews and observations that the new generation workforce highly values a work-life balance in their lives. They are determined to weigh the job description, their compensation, and personal time they can have before deciding to join an organization. They expressed their dissatisfaction with situations where the organizations would force them to take on an extra workload that may disrupt the balance they had in mind. A multimedia and art major summarized the issues involved as follows: “*Many of us took some part-time jobs and many firms expect us to do more than we had initially agreed upon. It made us feel unimpressed and unwilling to work.*”

The new generations also stressed the need for a prior mutual agreement in the event they are expected to work more than the normal workload. Many expressed concerns about unwanted workloads pushed onto newcomers, which often end up creating a toxic work environment. As one participant expressed, “*We were anxious about an organizational culture that involves assigning unwanted jobs away from the original person responsible for it to the newcomers. It would make us feel discouraged and the working experience toxic.*” Clearly, across all majors, the new generation workforce a work-life balance and expects organizations to respect agreed-upon workloads and avoid assigning extra work or unwanted tasks to

newcomers, emphasizing the need for mutual agreement and a fair and empathetic approach from supervisors and HR professionals.

(v) Offering Fair Compensation and Benefits

The new generation workforce is willing to accept entry-level salaries but expect that the specific benefits they bring to the company would be compensated for. As one participant, a marketing major, explained, *"we are unfamiliar with calculating the compensation rate and bonus in the labor market. We knew that not many organizations were willing to select inexperienced individuals. However, we expected the organization to compensate us for our mastery of online and technologies and other related skills."* The main point emphasized was the expectation of a fair compensation scheme.

In addition, the new generation workforce expressed concerns about the mismatch between compensation and workload. This was especially the case with those majoring in digital media, all of whom had part-time work experience. As one of them explained, *"the nature of digital media work usually requires a significant amount of time. However, some organizations prioritize the outcome and expand the scope of work beyond our capacity. Suppose an experience continues when we work as full-time employees. In that case, we might consider leaving the organization."* The feedback from other majors was consistent with this sentiment and summarized as follows: *"Having to handle irrelevant work will create pressure and lead to a loss of motivation to continue working."* This may well become a real controversial issue for HR as the new generation clearly expects appropriate compensation and benefits that align with their agreed-upon job responsibilities and contribution.

5. Conclusion and Recommendations

Research on workplace environments has been a study subject for several decades. Findings generally fall into two categories: physical support and psychological support (Amin & Chakraborty, 2021; Briner, 2000). This is also the case in this study. The new generation workplace expectations can be conceptualized into the same two categories. Psychological support for the purpose of this study includes creativity empowerment, training and mentoring, two-way communication, and work-life balance. The latter is an element of the physical support category as well, which also includes compensation and benefits. The way psychological support is to be understood in this study aligns with the meaning ascribed to it in previous literature. The emphasis is on empathy, which generates trust and helps to develop a better learning experience with other people (Rahman, 2016). This process, however, needs to be supported by two-way communication (Singh, 2014) and a work environment promoting creativity (Hassi, Rohlfer, & Jebsen, 2021). For the new generation workforce, the notion of a good work environment is also synonymous with an efficient training program and the presence of a mentor with whom they can openly discuss in a two-way communication and one who can assist them ungrudgingly.

This is in keeping with past research and the determination that such work conditions lead to a greater learning curve (Bauer, 2010). In addition, the new generation of pre-graduates soon to enter the workforce expect a fair delegation of work. If they were assigned an extra workload beyond what was agreed upon when they were hired, they would feel like people in the organization are taking advantage of them, clearly not the best way to create an environment of strong psychological support. Such expectations are in keeping with the findings of some previous research on equality in the workplace. As Hassan (2013) has argued, equality plays a key role in building satisfaction and motivation to work. According to McCrindle (2006), though, the main difference with previous generations is that work-life balance has now become a top priority as has mental health.

The new generation are all too aware of the increasingly more competitive work environment awaiting them and the real risks of depression and insomnia they pause to them, threats that were perceived as far less acute by past generations. Moreover, according to Ellis et al. (2014), the new generation also favors socialization. As Oyster (2022) reported, even though during the COVID-19 pandemic employees understandably preferred remote work, surprisingly, the new generation workforce in Thailand does not have such work-from-home expectations. They are more concerned, instead, with relationships and mentoring within the organization they will join. The enduring impact of the pandemic, however, is far more visible in terms of physical support. The findings in this study show that the new generation workforce in Thailand is quite concerned about workplace cleanliness, mostly as a remnant of the COVID-19 pandemic and the then quasi-obsession with hygiene and social distancing. As Amin and Chakraborty (2021) determined in their research on the effects of physical factors such as furniture, equipment, air quality, temperature, lighting, and noise on the quality of the workplace environment, they found little evidence of physical support. Cleanliness, however, was of paramount importance.

Psychological support remains the most critical factor influencing the work environment and one’s work-life balance. which in terms of physical support is defined as the balance between benefits and costs. As Farkiya, Mogre, and Patni (2017) have pointed out in their study on India’s new generation, work-life balance is not just a concern in Thailand but rather a more widespread generational demand.

- General Recommendations

Based on the analysis of the findings and discussions, this study recommends specific activities to improve the working environment for the new generation workforce, as presented in Table 3.

Table 3: Expectations and Activities for the New Generation Workforce Development

| | |
|------------------------------|---|
| Psychological support | Empowering creativity: Facilitate opportunities for employees to exercise and leverage creativity for future self-development and innovative solutions, including implementing technologies. |
| | Training and mentoring: Designate a mentor who can quickly assist in adapting to the new work environment and provide training to acquire the necessary skills. Provide education or training to learn about bonus, salary, leaves, and other benefits, as well as the income tax and health insurance system. |
| | Two-way communication: Provide opportunities for employees to gain a deeper understanding of the organization and encourage them to ask questions. If possible, provide mental health care professionals in the organization. |
| | Work-life balance: Ensure equitable work delegation, as the new generation workforce expects fair work responsibility and may reject assignment of unwanted work from colleagues. |
| Physical support | Work-life balance: Ensure that the new generation workforce has sufficient time for their self-care, as they plan to balance work responsibilities, personal time, and compensation. |
| | Compensation and benefits: Provide additional benefits to offset the low entry-level salary and address concerns about cleanliness due to the experience of the COVID-19 pandemic. |

- Recommendations for SMEs

Since SMEs generally have more limited resources than larger companies, they are more likely to face greater challenges retaining the new generation workforce, who prioritize a work-life balance. It is therefore recommended that they implement flexible working hours and create a work-life balance culture in their organizations. The sink-or-swim method, whereby new employees struggle alone, is counter-productive, no longer relevant, and bound to lead to high turnover rates during the first years of employment (Bauer, 2013; Tull, 2006). Since SMEs are the biggest employers in most countries, it is essential that they seek to retain new-generation employees with very valuable skills (Bose and Uddin, 2014). Because they are smaller organizations and typically have few employees, they should leverage their small workforce to develop close relationships offer effective psychological support to new employees and build an organizational culture of empathy and mutual support (Bauer, 2010; Park et al., 2019). Such practices are likely to attract the new generation workforce, all the more as simply focusing on compensation schemes that may compete with larger organizations may be a costly and uncertain strategy. Empowering new employees would also help to foster a supportive work environment and promote trust, leading to a perception of a good workplace environment (Hassi et al. 2021; Rahman, 2016; Singh, 2014). Finally, SMEs should also ensure that work delegation is fair, as unequal workloads could lead to dissatisfaction and demotivation (Hassan, 2013). Clearly, by prioritizing the psychological support and work-life balance that new generation employees seek, SMEs can improve their retention rates and foster a productive workforce.

- Recommendations for HR Managers

Based on these research findings, it is recommended that HR managers include policies in their onboarding guidelines that are designed to improve employee support at three levels: individual, team, and organization. At the individual level, organizations should ensure that opportunities are provided for new employees to utilize their skills. At the team level, they should ensure that on-the-job training makes it possible for new employees to build trustful relationships. Finally, at the organizational level, policies that support work-life balance and fair compensation to new employees who demonstrate real potential for growth should be adopted.

- Recommendations for Future Research

The findings in this study suggest that strong psychological and physical support could effectively meet the new generation's workforce expectations. Action research could therefore be used in future studies to assess onboarding processes and how successful employee development programs have been. This research solely focused on the new generation of Thai social science pre-graduates, who can easily switch careers after they graduate, unlike medical and science professionals who are constrained by licenses or certifications (e.g., nurses, midwives, dentists, pharmacists, and doctors). Thus, future studies should explore the workforce's expectations of this new generation of pre-graduates about to pursue a career in these specific fields.

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The Influence of Social Media Usage on Entrepreneurial Opportunity Recognition: A Perspective from Ratanakiri Province, Kingdom of Cambodia

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Abstract

Although social media has become a crucial part of an entrepreneur's strategies and practices, little research on social media usage as related to entrepreneurial opportunity recognition has been done in the context of Cambodia. Focusing on Ratanakiri province in Cambodia, a thriving and dynamic area particularly attractive to investors, this study seeks to investigate the influence of social media usage on entrepreneurial opportunity recognition. Multiple regression was used to analyze the data collected data from a survey questionnaire distributed to 376 respondents. Of the six dimensions of social media usage applied to this study, five were found to have a significant influence on entrepreneurial opportunity recognition. Access to Information and Cost Efficiency had the highest p-value, followed by Technical Adaptability, Product Improvement & Development, and Promotion with an equal p-value. However, the sixth dimension, Network Building, failed to significantly influence entrepreneurial opportunity identification. The results have implications for future research and practice and significantly contributes to the body of knowledge on social media, entrepreneurial opportunities, and related fields of study.

Keywords: Entrepreneur, Social Media Usage, Entrepreneurial Opportunity Recognition.

1. Introduction

Cambodia, a country rich in history and populated by energetic and enterprising people, is rapidly rebuilding itself (Tem, 2014; UNCTAD, 2017). It now ranks among the highest in the world in terms of poverty reduction and inclusive growth (UNDP, 2014). While the enduring hardship and suffering caused by war and poverty may not have vanished completely, it is steadily diminishing thanks in no small part to the rise of entrepreneurship, (World Bank Group, 2018). Entrepreneurship is intimately linked to identifying and exploiting entrepreneurial opportunities, which typically result from changes in one's environment (Shane & Venkataraman, 2000). Whether technological, political, regulatory, or socio-demographic, changes in one's environment create gaps in the market and unmet needs, which entrepreneurial individuals are likely to identify and take advantage of (Cohen & Winn, 2007). In short, they create opportunities to be leveraged. Recognizing opportunities is precisely at the root of entrepreneurial action, which can therefore be described as the process of identifying and exploiting potential opportunities to create value (Mary-George, Parida, & Lahti, 2016).

How entrepreneurs identify opportunities and benefit from them has been the subject of numerous studies (Jiang et al., 2014; Mary-George et al., 2016; Kungwansupaphan & Leihaothabam, 2019). Among the various determinations made, it has been found that, today, many of the opportunities identified relate to online trade and the growing popularity of internet applications and platforms connecting buyers and sellers (Shemi & Procter, 2018;). There is a large body of literature showing that social media is an effective communication tool that can positively influence sales (Alvarez, Barney, & Anderson, 2013; Dewan, Ramaprasad, & McGill University, 2014; Enyinda et al., 2020). brand perception (Cosson, 2003; Hudson et al., 2016), and customer relations (Fischer & Rebecca Reuber, 2014; Wang & Kim, 2017) as it increases brand exposure, enhance consumer loyalty, and make it easier to view competitors (Em, Makmee, & Wongupparaj, 2020). Social media has received a lot less attention from entrepreneurs and in many cases has been critical to the success of their entrepreneurial endeavors (Hossain & Rahman, 2018; Park, Sung, & Im, 2017).

Cambodian entrepreneurs are no exception. By and large, the rise of entrepreneurship has been coinciding with the rise of social media, most notably Facebook (Seakleng, 2021). This has been even more the case as the systems for purchasing goods or services online and have orders delivered have steadily improved over the last decade. Technological advancements and infrastructure redevelopment have broken down the barrier between consumers and sellers and steadily increased the popularity of social media (Em et al., 2020). Indeed, an estimated 13.44 million Cambodians (78.8%) out of a total population of 17.06 million are now internet users, and 12.60 million of them (73.9%) have a social media account (Digital Cambodia, 2022). This is a big jump as compared to 2016, when only 27% of Cambodians used social media (Simon, 2022). A good illustration of the present business dynamics is the province of Ratanakiri located in the Northeast of Cambodia and sharing a border with Vietnam. Designated key priority sectors by the government (Ministry of Planning, 2019), its agriculture, industry, and tourism present ample opportunities for trade and investment (Phum, Hiai, Tian, & District, n.d.). New socio-professional categories are emerging as a result, many of them budding entrepreneurs with new ideas and ready to launch a business. Established entrepreneurs are also active, having identified additional ways to grow their businesses, increase profits, and maintain a competitive edge in the market (Mumi, Obal, & Yang, 2019).

In both cases, social media has been another opportunity for these entrepreneurs in the province to deliver their products and services to customers, engage in daily communications, and push their brands to the mass audience (Pholreaseyh, 2020). Statistics provide a compelling narrative. In 2021, 6,083 businesses were registered with the Department of Commerce in Ratanakiri province (Ratanakiri Provincial Planning Department, 2022). This number is growing weekly as many people relocate from other provinces to engage in farming, tourism, and export activities, a clear indication of the high concentration of entrepreneurial-minded individuals and high level of entrepreneurial opportunity recognition in this province. This brings to the fore the issue of how much of this recognition process can be attributed to social media usage; an issue which this study seeks to address this issue by focusing on Ratanakiri province, and one which has yet to be investigated in a Cambodian context. Specifically, as an attempt to fill this gap in the relevant literature, it aims to determine the extent to which social media usage may impact entrepreneurs' recognition of viable business opportunities.

2. Literature Review

- *Social Media Usage*

The term “social media” refers to the collection of web-based apps that are built on the conceptual and technological foundations of Web 2.0 and allow for the creation and exchange of User Generated Content (Quan-Haase & Sloan, 2017). Social media has also been defined

as a type of computer-mediated communication software that allows users to create, share, and view material in publicly networked one-to-one, one-to-many, and many-to-many interactions (Hopkins, 2017). Social media platforms are being adopted at an unprecedented rate around the world, illustrating the exceptional nature of the social media revolution and the inexorable decrease of the power of traditional media (Quan-Haase & Sloan, 2017). Indeed, internet-based social media growth in popularity is such that today, anyone can communicate with literally thousands of individuals about specific products and businesses (Pourkhani et al., 2019). Entrepreneurs have access to a virtually limitless number of social media resources. Social media is changing how firms operate and advertise their products and is being increasingly used by entrepreneurs (Beninger et al., 2016). This is especially the case in developing nations (Olanrewaju et al., 2018). Studies have highlighted its usage for brand recognition, advertising, and customer relationship management (Misirlis & Vlachopoulou, 2018; Wright, 2018).

- Entrepreneurial Opportunity Recognition

Shane and Venkataraman (2003) described entrepreneurial opportunity recognition as a process whereby individuals identify, recognize, and discover potential opportunities to create and develop new businesses, ventures, markets, and technology. Entrepreneurship is not just about developing new products but, first and foremost, identifying undiscovered markets and business opportunities, including unmet consumer needs and gaps in the market (Wang, Ellinger, & Jim Wu, 2013). The recognition of opportunities is at the core of the entrepreneurial process (Kerrin, Mamabolo & Kele, 2017). Recognizing a new opportunity has the potential to bring innovative goods and services to market by inventing new products or dramatically upgrading existing ones (Śledzik, 2013). According to Eckhardt and Shane (2003), entrepreneurial activities are founded on the examination of the role and methodology of opportunity recognition. (Wang et al. (2013) concluded that an entrepreneur will discover and take advantage of potential industrial opportunities which competitors will be unaware of due to their insights and capacity to identify profitable opportunities. Entrepreneurship has long been acknowledged in the relevant literature as a potential strategy for maintaining and improving competitive advantages and innovative performance (Carolis & Saporito, 2006). Shu, Ren, and Zheng (2018) conceptualized that the development of opportunities can be explained through both the discovery and creation processes rather than simply through one or the other.

Opportunity discovery refers to the methodical process of innovation that produces new ideas, combines them to create possible prospects, and then selects the most promising ones for analysis, which serves as the foundation for commercial development (Strategic Business Insights, 2022). Some academics hold the view that opportunities are independent of entrepreneurs and exist in the market “waiting to be found” (Shane, 2012; Park et al., 2017). This view is based on Kirzner’s (1997) idea of opportunity discovery, according to which, opportunities are perceived as a function of actual reality. Alvarez and Barney (2007) determined they are only waiting to be discovered “out there.” Business opportunities exist regardless of entrepreneurs (Eckhardt & Shane, 2003). Opportunity creation is the process of establishing and producing business opportunities, as well as the opportunity's previously undefined or unknown means and ends, through an entrepreneur's actions (Puhakka & Stewart, 2015). The theory of opportunity creation has been gaining strength as there is ample empirical evidence demonstrating that entrepreneurs initiate an iterative process of enactment to create opportunities (González, Husted, & Aigner, 2017). Opportunities will be produced as a result of entrepreneurs' actions (McMullen, Plummer, & Acs, 2007), They primarily depend on entrepreneurs' views of the resources available to explore possibilities and on their opinions about the nature of such opportunities (Baker & Nelson 2005; Kaplan & Haenlein, 2010)

- Social Media Usage and Entrepreneurial Opportunity Recognition

There has been a significant increase in the number of social networking sites in the last decades and a similar exponential rise in the number of users (Perrin, 2015). Socializing is a fundamental element of human conduct (Schjoedt, Brännback, & Carsrud, 2020). Social media is changing the way people learn, read, and interact more broadly. These behavioral changes have affected organizations at all levels, particularly in the way customers behave in terms of consumption and purchase (Alves, Fernandes, & Raposo, 2016). Entrepreneurs can now maintain their current contacts, increase their visibility, and engage in intense peer exchanges through social media, enabling entrepreneurial opportunity recognition (Gustafsson & Khan, 2017). Thus, social media presents a significant opportunity for entrepreneurs, especially those who are just starting to engage in market communication, to increase brand awareness for relatively minimal, or perhaps no, expense (Parveen, Jaafar, & Ainin, 2016). According to Briel, Davidsson, and Recker (2018), social media serves as an external facilitator for small enterprises, families-owned enterprises, large businesses, and SMEs alike. Entrepreneurs can now discover and create opportunities by evaluating both existing and new information while communicating and interacting with peers on social media platforms (Park et al., 2017).

This study uses six dimensions of social media usage. All of them were selected based on the review of the existing relevant literature and advice from the experts consulted. They include: (i) technical adaptability, (ii) network building, (iii) access to information, (iv) cost efficiency, (v) product improvement and development, and (vi) promotion.

(i) Technical Adaptability

Technical adaptability refers to the capacity to learn new technologies rapidly and confidently (McMichael, 2018). The rapid adoption of technology platforms and systems is one of the most important variables in promoting entrepreneurial activities, particularly among small businesses (Wynn & Jones, 2019). Digital breakthroughs have created business prospects that provide significant service and product value (Fauzi et al., 2020). The new technology novel ways of discovering markets and servicing customers have radically changed the competitive dynamics and lowered the obstacles to business use (Mark, 2018). The adaptability of social media motivates entrepreneurs to use them.

H1: *Technical adaptability has a positive influence on entrepreneurial opportunity recognition.*

(ii) Network Building

Network building has been linked to the number of new opportunities that entrepreneurs perceive (Singh, 2000). A network provides the added benefit of engaging with other professionals in or related to the industry (Ward, 2021). The availability of new media and communication networks has been exponentially improving the capacity to network with other people and handle a wide range of complicated social and communication issues, which in turn benefits entrepreneurial opportunity recognition (Pritt, 2020). Moreover, a network can improve performance through the facilitation of knowledge flows or technological improvements (Zubielqui, Jones, & Statsenko, 2016), keep transaction costs low (Lin & Lin, 2016), provide all participants with a supply of flexible and relatively inexpensive resources, and encourage the development of new products and processes (Mazzola, Perrone, & Kamuriwo, 2016). Depending on the network that the entrepreneur is a part of, some individuals may be better at observing and recognizing opportunities than others (Mary George et al., 2016).

H2: *Network building has a positive influence on entrepreneurial opportunity recognition.*

(iii) Access to Information

The ability to locate, obtain, and successfully use information is known as access to information (Becker, 2022). Dyer, Gregersen, and Christensen (2009) argued that the quantity, quality, and speed with which people can receive the information needed to uncover entrepreneurial opportunities are all determined by the nature of one's social relationships. Some entrepreneurs may have better access to information due to their larger and more diverse social networks, which serve as a channel for information, enabling them to spot opportunities (Fernández-Pérez, García-Morales, & Pullés, 2016). The more time spent searching for and integrating information, the more likely it is that a new business opportunity may be discovered as entrepreneurs can access to find information that will assist them to identify new opportunities and businesses. (Dyer et al., 2009; Wahyuni & Quddus, 2021).

H3: *Access to information has a positive influence on entrepreneurial opportunity recognition.*

(iv) Cost Efficiency

Cost efficiency is the capacity of businesses to lower costs, improve productivity, and increase profits compared to businesses with comparable resources (Weinberg, 2009). The primary benefit of social media is financial. Many social media tools are free, even for business use, in contrast to traditional marketing strategies, which can cost millions of dollars. Thus, even with a small marketing budget, businesses may execute extremely effective social media campaigns. This is especially the case with marketing, which has relatively minimal price barriers when compared to traditional forms of advertising (Ahmad, Ahmad, & Abu Bakar, 2018). For those with a lack of prior knowledge or limited funds, social media can facilitate connections in an easy-to-use and low-cost way (Ali, 2011). Furthermore, firms can engage in a timely and direct manner with end-consumers via at a lower cost and with higher efficiency than traditional communication tools (Kaplan & Haenlein, 2010). In short, social media provides cost efficiency.

H4: *Cost efficiency has a positive influence on entrepreneurial opportunity recognition.*

(v) Product Improvement & Development

Product development and improvement is the process of thinking, designing, creating, and marketing newly or relaunched products and services (TechTarget, 2019). According to Litvin, Goldsmith, and Pan (2008), user-generated content on social media is a significant source of strategic information that can be used to develop a variety of business strategies, one of which being product improvement. Social media users are now more likely to express their thoughts and actively share product feedback information such as user experiences and opinions since they do not have to share their true identities or worry about bad consequences (Liu et al., 2015). Customer feedback available on social media shows the quality of the products, customer behaviors, and customer preferences, all of which have significant commercial value and contribute to product improvement and development (Abrahams et al., 2013). Social media empowers consumers to make quality judgments and through user quality-related reviews of products.

H5: *Product development & improvement have a positive influence on entrepreneurial opportunity recognition.*

(vi) Promotion

The term 'promotion' refers to all the activities that inform consumers about a product, brand, or service (Barger et al., 2016). Promotion through social media plays an important role in increasing business value, sales turnover, market share, and profitability (Kiron et al., 2012). This is precisely why, in order to gain a competitive advantage, businesspeople try to integrate social media into their daily operations (Yasa et al., 2020). Social media are seen as more credible, trustworthy, and knowledgeable, particularly for businesses that target younger

generations (Barger, Peltier, & Schultz, 2016). Entrepreneurs can target audiences based on the specific interests of site visitors and what they enjoy (Hill, Provost, & Volinsky, 2006).

H6: *Promotion has a positive influence on entrepreneurial opportunity recognition.*

- Conceptual Framework

Figure 1 shows the conceptual framework constructed from existing frameworks in prevalent previous studies.

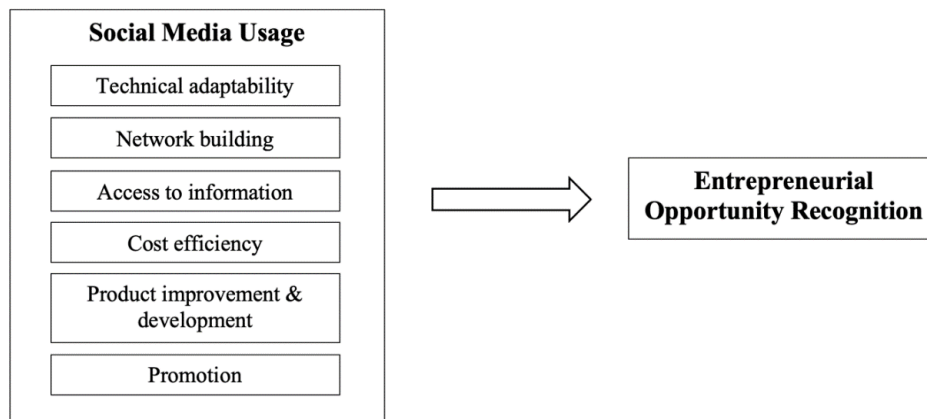


Figure 1: Conceptual Framework (created by authors for this study)

3. Methodology

- Population and Sample

The initial total population included all the businesses registered with the Department of Commerce in Ratanakiri province in 2022; 6,083 in total (Ratanakiri Provincial Planning Department, 2022). Using Yamane’s (1973) formula with a confidence level of 95 percent and an error of 5 percent, it was then determined that the sample size should be 376. Convenience sample, which in this study consisted of three distinct groups, merchandise (n=220), service (n=111), and manufacturing (n=45), was used as the sampling method.

- Research Tools

A survey questionnaire based on concepts and questionnaires from previous studies discussed above was then developed. The first section focuses on the respondents’ backgrounds (9 questions). The second section, on the dimensions of social media usage, was adapted from a questionnaire developed by Hossain & Rahman (2018) (21 questions). The third section, on entrepreneurial opportunity recognition, is rooted in studies by Ceptureanu et al. (2020) and Park et al. (2017), respectively (11 questions). The fourth section consists of one question on the issues that entrepreneurs face while using social media in the course of their businesses. All of the items were translated into the Cambodian language. Moreover, to ensure that each translation scale was adequate, the procedure for cross-cultural adaptation was outlined in the translated questionnaire (Beaton et al., 2002). A five-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used in sections 1 and 2.

Cronbach's alpha was used to evaluate reliability. The results are shown in Table 1. They show values of reliability over the 0.7 threshold. Social media usage is 0.90 and entrepreneurial opportunity recognition 0.86. It could therefore be concluded that the questionnaire had high reliability (Hair et al., 2010).

Table 1: Questionnaire's Reliability Value

| Variable | Number of questions | Cronbach's alpha coefficient |
|---|---------------------|------------------------------|
| Social media usage | 21 | 0.90 |
| Entrepreneurial opportunity recognition | 11 | 0.86 |

- Data Collection

The distribution and collection of the questionnaires took place in Ratanakiri province. To ensure that the targeted respondents matched the objectives of this survey, only entrepreneurs with experience using social media in Ratanakiri province were purposefully encouraged to participate in the survey. Based on Yamane's (1973) formula, the sample size was determined to be as follows: $n = 376$. The researchers used two approaches to collect the 376 responses needed. The first one consisted in producing an online questionnaire using online software delivered to entrepreneurs through Facebook, Telegram, Email, and various other social media platforms. They could be completed on either a computer or a smartphone. However, Only 346 questionnaires were received through this method. To obtain the 30 additional questionnaires needed, a second approach, meant to encourage entrepreneurs who had difficulties answering on an online platform to participate in the survey, was designed. Questionnaires were printed out and directly delivered to the respondents' addresses by the researchers themselves. It took two months (November 11, 2022 - January 11, 2023) for the researchers to receive 100.0% of the sample requirement ($n=376$).

- Statistical Analysis

This study reports descriptive statistics and multiple regression. The descriptive statistics consisted of mean, frequency, percentage, and standard deviation. Multiple regression was used to analyze the relationship among the six factors pertaining to social media usage and entrepreneurial opportunity recognition.

4. Findings and Discussion

- Descriptive Analysis

The results of the descriptive statistical analysis are shown in Tables 2 and 3. They provide an initial profile of the respondents in this study. As Table 2 indicates, a majority of the respondents were female ($n=246$, 65.40%) and 51.60 % of the respondents were between 31 and 40 years old ($n=194$). The level of education of 64.40% of the participants ($n=237$) was below a bachelor's degree.

Table 2: Respondents’ Profile

| Participants’ Information | | Frequency (n=376) | Percentage (pct=100) |
|---------------------------|-------------------------|----------------------|-------------------------|
| Gender | Male | 130 | 34.60 |
| | Female | 246 | 65.40 |
| Age | Under 20 years old | 12 | 3.20 |
| | 21-30 years old | 106 | 28.20 |
| | 31-40 years old | 194 | 51.60 |
| | 41-50 years old | 60 | 16.00 |
| | Above 51 years old | 4 | 1.00 |
| Education | Below bachelor’s degree | 242 | 64.40 |
| | Bachelor’s degree | 125 | 33.20 |
| | Above bachelor’s degree | 9 | 2.40 |

Table 3 provides information about the respondents’ businesses. More than half of them were classified as merchandise (n=220, 58.50%), followed by services (n=111, 29.50%), and manufacturing (n=45, 12.00%), by far the smallest sector. The monthly income level most representative was between \$1,000-\$3000 (n=164, 43.60%). Almost half of them indicated using 49.50% (n=186) indicated using Facebook in running their businesses (recall that s/ix social media platforms were listed in the survey). Most of them have been using social media for 3 or 4 years (n=161, 42.80%). When asked to point out one social media contribution to their businesses, a large proportion of entrepreneurs indicated attracting customers (n=122, 32.40%) and more than half ticked ‘good’ as an assessment of the level of social media contribution to their businesses (n=214, 57.90%).

Table 3: Information about Respondent’s Businesses

| Participations’ Information | | Frequency (n=376) | Percent (pct=100) |
|--|----------------------------------|----------------------|----------------------|
| Business Type | Merchandise | 220 | 58.50 |
| | Service | 111 | 29.50 |
| | Manufacturing | 45 | 12.00 |
| Business Income | Less than \$1,000 | 57 | 15.20 |
| | \$1,001-\$3,000 | 164 | 43.60 |
| | \$3,001-\$5,000 | 130 | 34.60 |
| | More than \$5,001 | 25 | 6.60 |
| Social Media Platform | Facebook | 186 | 49.50 |
| | Instagram | 44 | 11.60 |
| | Messenger | 66 | 17.60 |
| | Telegram | 64 | 17.00 |
| | TikTok | 16 | 4.30 |
| Years of Experience Using Social Media | Less than a year | 24 | 6.40 |
| | 1-2 years | 131 | 34.80 |
| | 3-4 years | 161 | 42.80 |
| | More than 4 years | 60 | 16.00 |
| Area of Social Media Contribution | Attract customers | 122 | 32.40 |
| | Increase market share | 99 | 26.40 |
| | Brand development | 39 | 10.30 |
| | Knowledge management | 42 | 11.20 |
| | Innovation | 15 | 4.00 |
| | Customer relationship management | 27 | 7.20 |
| | Competitive monitoring | 6 | 1.60 |
| | Collaboration and communication | 26 | 6.90 |
| | Excellent | 115 | 30.60 |

| | | | |
|--|---------|-----|-------|
| Contribution level of Social Media to Business | Good | 214 | 56.90 |
| | Neutral | 31 | 8.20 |
| | Bad | 13 | 3.50 |
| | Worst | 3 | 0.80 |

- Multiple-Regression Analysis

Table 4 shows the results of the multiple regression analysis conducted in this study. The variance inflation factors (VIF), which, as recommended by Hair et al. (2010), should be lower than 10, range from 1.720 to 2.265. The VIF result indicates that the remaining predicted variables in the multiple regression model might contain all variables with undetected multicollinearity and independent variables. The results show a significant influence of social media usage on entrepreneurial opportunity recognition (F= 62.418, P=.000) with R-squared=0.504, suggesting that 50.40% of the data is predicted by the listed factors and the remaining 50.60% is influenced by various other factors not taken into consideration in this study. As determined by Hair et al. (2010), the strong, moderate, and weak models, respectively, are indicated by R-squared values of 0.75, 0.50, and 0.25. Considering the unique individual contributions of the predictors, the results indicate that Technical Adaptability (B=.134, t=3.378, P=.001), Access to Information (B=.222, t=3.694, P=.000), Cost Efficiency (B=.160, t=3.653, P=.000), Product Improvement & Development (B=.167, t=3.284, P=.001), and Promotion (B=.157, t=3.345, P=.001), positively predict entrepreneurial opportunity recognition. One dimension, Network Building, however, does not predict entrepreneurial opportunity recognition (B=.000, t=.010, P=.992).

Table 4: Results of Multiple-Regression Analysis

| Social media Usage | B | SE _b | t | P-value | VIF |
|--|------|-----------------|-------|---------|-------|
| Constant value | .627 | .191 | 3.281 | .001 | |
| Technical adaptability (TA) | .134 | .040 | 3.378 | .001* | 1.802 |
| Network building (NB) | .000 | .046 | .010 | .992 | 1.720 |
| Access to information (AI) | .222 | .060 | 3.694 | .000* | 2.265 |
| Cost efficiency (CE) | .160 | .044 | 3.653 | .000* | 1.827 |
| Product improvement & development (I&D) | .167 | .051 | 3.284 | .001* | 1.956 |
| Promotion (P) | .157 | .047 | 3.345 | .001* | 1.868 |
| R= .710, R-squared = .504, Adjusted R-squared = .496, F= 62.418, Sig= .000 | | | | | |

*Level of significance at 0.05

Note: Dependent variable: Entrepreneurial opportunity recognition (EOR)

Based on the data in Table 4, the following equation for multiple regression was developed for this study:

$$Y_{EOR} = 0.627 + 0.134X_{TA} + 0.222X_{AI} + 0.160X_{CE} + 0.167X_{PI\&D} + 0.157X_P$$

This study focuses on six critical dimensions of social media usage and provides empirical evidence to support the potential influence of social media usage on entrepreneurial opportunity recognition. Findings regarding the Technical Adaptability dimension of social media usage show that the basic technology literacy of Ratanakiri province entrepreneurs is such that they are likely to encounter few technical complications running their businesses. As a matter of fact, their adaptation to (and adoption of) social media technology is sufficient to enable them to recognize entrepreneurial opportunities.

This is consistent with Hossain and Rahman's (2018) conclusion that technical adaptability has a valuable impact on the availability of business opportunities on social media platforms, in this case, for female entrepreneurs in Bangladesh. It was also found that entrepreneurs' ability to recognize business opportunities was closely linked to the Access to Information and Cost Efficiency dimensions since entrepreneurs using social media can effectively gather information for opportunity-recognition purposes in a cost-effective manner. Cost efficiency also pertains to entrepreneurs' ability to collect and analyze valuable information to improve operations and reduce costs while increasing revenue and profits, which in turn is made possible by their easy access to information stored on social media. This is in keeping with Lim and Xavier (2015), who found that individuals can better recognize opportunities when they have easy access to information and prior knowledge. The findings of this current research study are also in line with the conclusions reached by Archdvili, Cardozo, & Ray (2003) and Baron (2006) in their studies that information availability is crucial for recognizing opportunities.

Another promising finding relates to the Cost Efficiency dimension as the use of social media can help entrepreneurs make the most of an opportunity and run a business in a profitable way. This finding is consistent with Al Harrasi et al.s (2021) determination that social media develop more efficient customer service communication and reduce production costs and with Basri's (2016) study, which concluded that social media provided a ground-breaking advantage for businesses seeking to lower costs and increase profitability. As to the Product Improvement & Development dimension, the results indicate that, customers' feedback on social media can trigger new idea generation which in turn enables entrepreneurs to develop new products and services that better meet customers' demands and needs. Conversely, it also enables them to inform customers about these improvements through the same channel thanks to back-and-forth communication. This is consistent with research on social media and entrepreneurship growth conducted by Jagongo and Kinyua (2013) and by Bhatia, Peng, and Sun (2013) who show that customer feedback on social media can help improve a business's products and services as well reputation among consumers

Finally, it is also clear from the results regarding the Promotion dimension, that promoting products and services on social media works better as compared to using traditional media due to its ease of access and convenience. To put it another way, social media is an easy marketing tool for executing publicity activities. This is consistent with Infante and Mardikaningsih's (2022) study, in which it was found that, compared to traditional marketing, social media promotion is more effective. This is also in line with a study conducted by Jones, Borgman, and Ulusoy's (2015) in which they determined that the regularity of promotion on social media can enhance a business's success by increasing traffic, brand recognition, and sales. As noted above, one dimension, Network Building, does not predict entrepreneurial opportunity recognition. The results in our study revealed that several entrepreneurs in the Ratanakiri province are likely not to use social media to create greater loyalty among customers in their businesses. Moreover, it also brought to light the fact that social media did not help entrepreneurs increase their visibility, take advantage of greater customer involvement, and build online followers. It was found that due to persistent misconceptions about social media, they were likely to keep focusing more on traditional ways to build a network; ways which they are accustomed to. This finding on the lack of influence of network building on entrepreneurial opportunity recognition diverges from earlier studies, including a study from Hossain and Rahman (2018), who found that social media provides a platform that allows entrepreneurs to build networks with customers and as such, helps to identify entrepreneurial opportunities and product attributes in need of improvement.

5. Conclusion and Recommendations

This study aimed to investigate the influence of social media usage on entrepreneurial opportunity recognition in Ratanakiri province, Cambodia. The results indicate that five out of the six dimensions used in this study to examine social media usage, namely, Technical Adaptability, Access to Information, Cost Efficiency, Product Development & Improvement, and Promotion, have a significant influence on entrepreneurial opportunity recognition. However, the sixth dimension, Network Building, does not significantly influence the recognition of entrepreneurial opportunities. The more intense entrepreneurs' use of social media, the greater the likelihood of their recognizing opportunities and the less likely their willingness to leverage being part of a community of entrepreneurial people. The results of this study have implications for future research and practice and significantly contribute to the body of knowledge on social media, entrepreneurial opportunities, and related fields of study.

Based on the findings in this study, the following suggestions can be made:

- Entrepreneurs should make sure to develop and update their social media technologies as it would increase efficiency.
- In the same vein, they should keep abreast of the fast-changing social media functions and stay up to date.
- They should keep searching information on the internet while remaining vigilant at the same time as online information can be unreliable, let alone the risk of information overload, which can lead to a waste of time.
- They should build networks on social media and meet new people with common areas of interest as it is easy for individuals to talk with one another.
- Finally, entrepreneurs in Ratanakiri province should take advantage of the Border Areas Development Project which supports the objectives of the Cambodia-Laos-Vietnam Development Triangle Area (Asian Development Bank, 2020). As part of this program, they could gain access to foreign markets where they could reach thousands more potential online customers who may not be otherwise able to become aware of their products.

Clearly, entrepreneurs have a lot to gain from using social media, not only to identify opportunities, but also to improve their products and services. Promoting their products or services through social media is economical and one of the most adaptable strategies entrepreneurs have for reaching their target market and increasing sales.

- Recommendations for Future Studies

This study has several limitations:

- Firstly, only one area in Cambodia, Ratanakiri province, was selected for collecting data, which may limit the generalization of the findings to other regions of Cambodia. Future studies should therefore compare the usage of social media in different economic potential locations to see how if there are distinctive level of entrepreneurial opportunity recognition.in Cambodia.
- Secondly, this study used a qualitative methodology, which may have limited the scope of the findings. Future researchers may thus use a qualitative approach to uncover additional relevant information.
- Thirdly, future research may investigate the diverse factors that influence entrepreneurial opportunities in specific business environments such as artificial intelligence.
- Finally, since Network Building was found to have no significance on entrepreneurial opportunity recognition and possibly affect the R-squared value, future research may explore this dimension in other contexts in order to determine whether the R-squared value is different as compared to this study.

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The Influence of Social Media Usage on Entrepreneurial Opportunity Recognition: A Perspective from Ratanakiri Province, Kingdom of Cambodia

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Abstract

Although social media has become a crucial part of an entrepreneur's strategies and practices, little research on social media usage as related to entrepreneurial opportunity recognition has been done in the context of Cambodia. Focusing on Ratanakiri province in Cambodia, a thriving and dynamic area particularly attractive to investors, this study seeks to investigate the influence of social media usage on entrepreneurial opportunity recognition. Multiple regression was used to analyze the data collected data from a survey questionnaire distributed to 376 respondents. Of the six dimensions of social media usage applied to this study, five were found to have a significant influence on entrepreneurial opportunity recognition. Access to Information and Cost Efficiency had the highest p-value, followed by Technical Adaptability, Product Improvement & Development, and Promotion with an equal p-value. However, the sixth dimension, Network Building, failed to significantly influence entrepreneurial opportunity identification. The results have implications for future research and practice and significantly contributes to the body of knowledge on social media, entrepreneurial opportunities, and related fields of study.

Keywords: Entrepreneur, Social Media Usage, Entrepreneurial Opportunity Recognition.

1. Introduction

Cambodia, a country rich in history and populated by energetic and enterprising people, is rapidly rebuilding itself (Tem, 2014; UNCTAD, 2017). It now ranks among the highest in the world in terms of poverty reduction and inclusive growth (UNDP, 2014). While the enduring hardship and suffering caused by war and poverty may not have vanished completely, it is steadily diminishing thanks in no small part to the rise of entrepreneurship, (World Bank Group, 2018). Entrepreneurship is intimately linked to identifying and exploiting entrepreneurial opportunities, which typically result from changes in one's environment (Shane & Venkataraman, 2000). Whether technological, political, regulatory, or socio-demographic, changes in one's environment create gaps in the market and unmet needs, which entrepreneurial individuals are likely to identify and take advantage of (Cohen & Winn, 2007). In short, they create opportunities to be leveraged. Recognizing opportunities is precisely at the root of entrepreneurial action, which can therefore be described as the process of identifying and exploiting potential opportunities to create value (Mary-George, Parida, & Lahti, 2016).

How entrepreneurs identify opportunities and benefit from them has been the subject of numerous studies (Jiang et al., 2014; Mary-George et al., 2016; Kungwansupaphan & Leihaothabam, 2019). Among the various determinations made, it has been found that, today, many of the opportunities identified relate to online trade and the growing popularity of internet applications and platforms connecting buyers and sellers (Shemi & Procter, 2018;). There is a large body of literature showing that social media is an effective communication tool that can positively influence sales (Alvarez, Barney, & Anderson, 2013; Dewan, Ramaprasad, & McGill University, 2014; Enyinda et al., 2020). brand perception (Cosson, 2003; Hudson et al., 2016), and customer relations (Fischer & Rebecca Reuber, 2014; Wang & Kim, 2017) as it increases brand exposure, enhance consumer loyalty, and make it easier to view competitors (Em, Makmee, & Wongupparaj, 2020). Social media has received a lot less attention from entrepreneurs and in many cases has been critical to the success of their entrepreneurial endeavors (Hossain & Rahman, 2018; Park, Sung, & Im, 2017).

Cambodian entrepreneurs are no exception. By and large, the rise of entrepreneurship has been coinciding with the rise of social media, most notably Facebook (Seakleng, 2021). This has been even more the case as the systems for purchasing goods or services online and have orders delivered have steadily improved over the last decade. Technological advancements and infrastructure redevelopment have broken down the barrier between consumers and sellers and steadily increased the popularity of social media (Em et al., 2020). Indeed, an estimated 13.44 million Cambodians (78.8%) out of a total population of 17.06 million are now internet users, and 12.60 million of them (73.9%) have a social media account (Digital Cambodia, 2022). This is a big jump as compared to 2016, when only 27% of Cambodians used social media (Simon, 2022). A good illustration of the present business dynamics is the province of Ratanakiri located in the Northeast of Cambodia and sharing a border with Vietnam. Designated key priority sectors by the government (Ministry of Planning, 2019), its agriculture, industry, and tourism present ample opportunities for trade and investment (Phum, Hiai, Tian, & District, n.d.). New socio-professional categories are emerging as a result, many of them budding entrepreneurs with new ideas and ready to launch a business. Established entrepreneurs are also active, having identified additional ways to grow their businesses, increase profits, and maintain a competitive edge in the market (Mumi, Obal, & Yang, 2019).

In both cases, social media has been another opportunity for these entrepreneurs in the province to deliver their products and services to customers, engage in daily communications, and push their brands to the mass audience (Pholreaseyh, 2020). Statistics provide a compelling narrative. In 2021, 6,083 businesses were registered with the Department of Commerce in Ratanakiri province (Ratanakiri Provincial Planning Department, 2022). This number is growing weekly as many people relocate from other provinces to engage in farming, tourism, and export activities, a clear indication of the high concentration of entrepreneurial-minded individuals and high level of entrepreneurial opportunity recognition in this province. This brings to the fore the issue of how much of this recognition process can be attributed to social media usage; an issue which this study seeks to address this issue by focusing on Ratanakiri province, and one which has yet to be investigated in a Cambodian context. Specifically, as an attempt to fill this gap in the relevant literature, it aims to determine the extent to which social media usage may impact entrepreneurs' recognition of viable business opportunities.

2. Literature Review

- *Social Media Usage*

The term “social media” refers to the collection of web-based apps that are built on the conceptual and technological foundations of Web 2.0 and allow for the creation and exchange of User Generated Content (Quan-Haase & Sloan, 2017). Social media has also been defined

as a type of computer-mediated communication software that allows users to create, share, and view material in publicly networked one-to-one, one-to-many, and many-to-many interactions (Hopkins, 2017). Social media platforms are being adopted at an unprecedented rate around the world, illustrating the exceptional nature of the social media revolution and the inexorable decrease of the power of traditional media (Quan-Haase & Sloan, 2017). Indeed, internet-based social media growth in popularity is such that today, anyone can communicate with literally thousands of individuals about specific products and businesses (Pourkhani et al., 2019). Entrepreneurs have access to a virtually limitless number of social media resources. Social media is changing how firms operate and advertise their products and is being increasingly used by entrepreneurs (Beninger et al., 2016). This is especially the case in developing nations (Olanrewaju et al., 2018). Studies have highlighted its usage for brand recognition, advertising, and customer relationship management (Misirlis & Vlachopoulou, 2018; Wright, 2018).

- Entrepreneurial Opportunity Recognition

Shane and Venkataraman (2003) described entrepreneurial opportunity recognition as a process whereby individuals identify, recognize, and discover potential opportunities to create and develop new businesses, ventures, markets, and technology. Entrepreneurship is not just about developing new products but, first and foremost, identifying undiscovered markets and business opportunities, including unmet consumer needs and gaps in the market (Wang, Ellinger, & Jim Wu, 2013). The recognition of opportunities is at the core of the entrepreneurial process (Kerrin, Mamabolo & Kele, 2017). Recognizing a new opportunity has the potential to bring innovative goods and services to market by inventing new products or dramatically upgrading existing ones (Śledzik, 2013). According to Eckhardt and Shane (2003), entrepreneurial activities are founded on the examination of the role and methodology of opportunity recognition. (Wang et al. (2013) concluded that an entrepreneur will discover and take advantage of potential industrial opportunities which competitors will be unaware of due to their insights and capacity to identify profitable opportunities. Entrepreneurship has long been acknowledged in the relevant literature as a potential strategy for maintaining and improving competitive advantages and innovative performance (Carolis & Saporito, 2006). Shu, Ren, and Zheng (2018) conceptualized that the development of opportunities can be explained through both the discovery and creation processes rather than simply through one or the other.

Opportunity discovery refers to the methodical process of innovation that produces new ideas, combines them to create possible prospects, and then selects the most promising ones for analysis, which serves as the foundation for commercial development (Strategic Business Insights, 2022). Some academics hold the view that opportunities are independent of entrepreneurs and exist in the market “waiting to be found” (Shane, 2012; Park et al., 2017). This view is based on Kirzner’s (1997) idea of opportunity discovery, according to which, opportunities are perceived as a function of actual reality. Alvarez and Barney (2007) determined they are only waiting to be discovered "out there." Business opportunities exist regardless of entrepreneurs (Eckhardt & Shane, 2003). Opportunity creation is the process of establishing and producing business opportunities, as well as the opportunity's previously undefined or unknown means and ends, through an entrepreneur's actions (Puhakka & Stewart, 2015). The theory of opportunity creation has been gaining strength as there is ample empirical evidence demonstrating that entrepreneurs initiate an iterative process of enactment to create opportunities (González, Husted, & Aigner, 2017). Opportunities will be produced as a result of entrepreneurs' actions (McMullen, Plummer, & Acs, 2007), They primarily depend on entrepreneurs' views of the resources available to explore possibilities and on their opinions about the nature of such opportunities (Baker & Nelson 2005; Kaplan & Haenlein, 2010)

- Social Media Usage and Entrepreneurial Opportunity Recognition

There has been a significant increase in the number of social networking sites in the last decades and a similar exponential rise in the number of users (Perrin, 2015). Socializing is a fundamental element of human conduct (Schjoedt, Brännback, & Carsrud, 2020). Social media is changing the way people learn, read, and interact more broadly. These behavioral changes have affected organizations at all levels, particularly in the way customers behave in terms of consumption and purchase (Alves, Fernandes, & Raposo, 2016). Entrepreneurs can now maintain their current contacts, increase their visibility, and engage in intense peer exchanges through social media, enabling entrepreneurial opportunity recognition (Gustafsson & Khan, 2017). Thus, social media presents a significant opportunity for entrepreneurs, especially those who are just starting to engage in market communication, to increase brand awareness for relatively minimal, or perhaps no, expense (Parveen, Jaafar, & Ainin, 2016). According to Briel, Davidsson, and Recker (2018), social media serves as an external facilitator for small enterprises, families-owned enterprises, large businesses, and SMEs alike. Entrepreneurs can now discover and create opportunities by evaluating both existing and new information while communicating and interacting with peers on social media platforms (Park et al., 2017).

This study uses six dimensions of social media usage. All of them were selected based on the review of the existing relevant literature and advice from the experts consulted. They include: (i) technical adaptability, (ii) network building, (iii) access to information, (iv) cost efficiency, (v) product improvement and development, and (vi) promotion.

(i) Technical Adaptability

Technical adaptability refers to the capacity to learn new technologies rapidly and confidently (McMichael, 2018). The rapid adoption of technology platforms and systems is one of the most important variables in promoting entrepreneurial activities, particularly among small businesses (Wynn & Jones, 2019). Digital breakthroughs have created business prospects that provide significant service and product value (Fauzi et al., 2020). The new technology novel ways of discovering markets and servicing customers have radically changed the competitive dynamics and lowered the obstacles to business use (Mark, 2018). The adaptability of social media motivates entrepreneurs to use them.

H1: *Technical adaptability has a positive influence on entrepreneurial opportunity recognition.*

(ii) Network Building

Network building has been linked to the number of new opportunities that entrepreneurs perceive (Singh, 2000). A network provides the added benefit of engaging with other professionals in or related to the industry (Ward, 2021). The availability of new media and communication networks has been exponentially improving the capacity to network with other people and handle a wide range of complicated social and communication issues, which in turn benefits entrepreneurial opportunity recognition (Pritt, 2020). Moreover, a network can improve performance through the facilitation of knowledge flows or technological improvements (Zubielqui, Jones, & Statsenko, 2016), keep transaction costs low (Lin & Lin, 2016), provide all participants with a supply of flexible and relatively inexpensive resources, and encourage the development of new products and processes (Mazzola, Perrone, & Kamuriwo, 2016). Depending on the network that the entrepreneur is a part of, some individuals may be better at observing and recognizing opportunities than others (Mary George et al., 2016).

H2: *Network building has a positive influence on entrepreneurial opportunity recognition.*

(iii) Access to Information

The ability to locate, obtain, and successfully use information is known as access to information (Becker, 2022). Dyer, Gregersen, and Christensen (2009) argued that the quantity, quality, and speed with which people can receive the information needed to uncover entrepreneurial opportunities are all determined by the nature of one's social relationships. Some entrepreneurs may have better access to information due to their larger and more diverse social networks, which serve as a channel for information, enabling them to spot opportunities (Fernández-Pérez, García-Morales, & Pullés, 2016). The more time spent searching for and integrating information, the more likely it is that a new business opportunity may be discovered as entrepreneurs can access to find information that will assist them to identify new opportunities and businesses. (Dyer et al., 2009; Wahyuni & Quddus, 2021).

H3: *Access to information has a positive influence on entrepreneurial opportunity recognition.*

(iv) Cost Efficiency

Cost efficiency is the capacity of businesses to lower costs, improve productivity, and increase profits compared to businesses with comparable resources (Weinberg, 2009). The primary benefit of social media is financial. Many social media tools are free, even for business use, in contrast to traditional marketing strategies, which can cost millions of dollars. Thus, even with a small marketing budget, businesses may execute extremely effective social media campaigns. This is especially the case with marketing, which has relatively minimal price barriers when compared to traditional forms of advertising (Ahmad, Ahmad, & Abu Bakar, 2018). For those with a lack of prior knowledge or limited funds, social media can facilitate connections in an easy-to-use and low-cost way (Ali, 2011). Furthermore, firms can engage in a timely and direct manner with end-consumers via at a lower cost and with higher efficiency than traditional communication tools (Kaplan & Haenlein, 2010). In short, social media provides cost efficiency.

H4: *Cost efficiency has a positive influence on entrepreneurial opportunity recognition.*

(v) Product Improvement & Development

Product development and improvement is the process of thinking, designing, creating, and marketing newly or relaunched products and services (TechTarget, 2019). According to Litvin, Goldsmith, and Pan (2008), user-generated content on social media is a significant source of strategic information that can be used to develop a variety of business strategies, one of which being product improvement. Social media users are now more likely to express their thoughts and actively share product feedback information such as user experiences and opinions since they do not have to share their true identities or worry about bad consequences (Liu et al., 2015). Customer feedback available on social media shows the quality of the products, customer behaviors, and customer preferences, all of which have significant commercial value and contribute to product improvement and development (Abrahams et al., 2013). Social media empowers consumers to make quality judgments and through user quality-related reviews of products.

H5: *Product development & improvement have a positive influence on entrepreneurial opportunity recognition.*

(vi) Promotion

The term 'promotion' refers to all the activities that inform consumers about a product, brand, or service (Barger et al., 2016). Promotion through social media plays an important role in increasing business value, sales turnover, market share, and profitability (Kiron et al., 2012). This is precisely why, in order to gain a competitive advantage, businesspeople try to integrate social media into their daily operations (Yasa et al., 2020). Social media are seen as more credible, trustworthy, and knowledgeable, particularly for businesses that target younger

generations (Barger, Peltier, & Schultz, 2016). Entrepreneurs can target audiences based on the specific interests of site visitors and what they enjoy (Hill, Provost, & Volinsky, 2006).

H6: *Promotion has a positive influence on entrepreneurial opportunity recognition.*

- Conceptual Framework

Figure 1 shows the conceptual framework constructed from existing frameworks in prevalent previous studies.

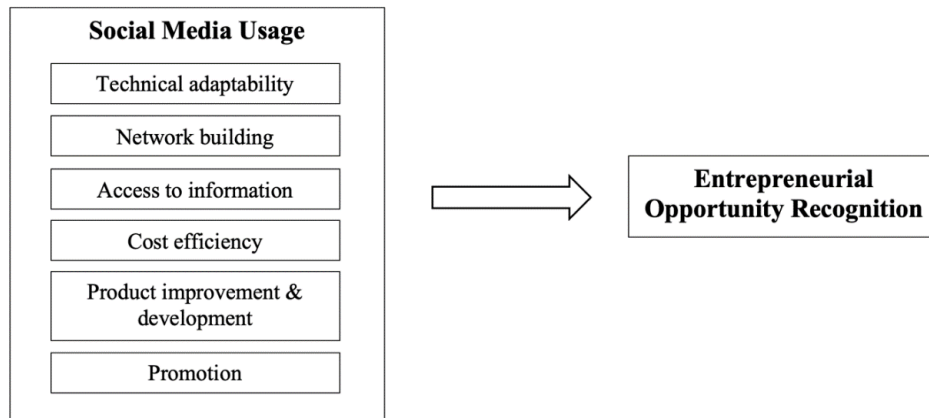


Figure 1: Conceptual Framework (created by authors for this study)

3. Methodology

- Population and Sample

The initial total population included all the businesses registered with the Department of Commerce in Ratanakiri province in 2022; 6,083 in total (Ratanakiri Provincial Planning Department, 2022). Using Yamane’s (1973) formula with a confidence level of 95 percent and an error of 5 percent, it was then determined that the sample size should be 376. Convenience sample, which in this study consisted of three distinct groups, merchandise (n=220), service (n=111), and manufacturing (n=45), was used as the sampling method.

- Research Tools

A survey questionnaire based on concepts and questionnaires from previous studies discussed above was then developed. The first section focuses on the respondents’ backgrounds (9 questions). The second section, on the dimensions of social media usage, was adapted from a questionnaire developed by Hossain & Rahman (2018) (21 questions). The third section, on entrepreneurial opportunity recognition, is rooted in studies by Ceptureanu et al. (2020) and Park et al. (2017), respectively (11 questions). The fourth section consists of one question on the issues that entrepreneurs face while using social media in the course of their businesses. All of the items were translated into the Cambodian language. Moreover, to ensure that each translation scale was adequate, the procedure for cross-cultural adaptation was outlined in the translated questionnaire (Beaton et al., 2002). A five-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree) was used in sections 1 and 2.

Cronbach's alpha was used to evaluate reliability. The results are shown in Table 1. They show values of reliability over the 0.7 threshold. Social media usage is 0.90 and entrepreneurial opportunity recognition 0.86. It could therefore be concluded that the questionnaire had high reliability (Hair et al., 2010).

Table 1: Questionnaire's Reliability Value

| Variable | Number of questions | Cronbach's alpha coefficient |
|---|---------------------|------------------------------|
| Social media usage | 21 | 0.90 |
| Entrepreneurial opportunity recognition | 11 | 0.86 |

- Data Collection

The distribution and collection of the questionnaires took place in Ratanakiri province. To ensure that the targeted respondents matched the objectives of this survey, only entrepreneurs with experience using social media in Ratanakiri province were purposefully encouraged to participate in the survey. Based on Yamane's (1973) formula, the sample size was determined to be as follows: $n = 376$. The researchers used two approaches to collect the 376 responses needed. The first one consisted in producing an online questionnaire using online software delivered to entrepreneurs through Facebook, Telegram, Email, and various other social media platforms. They could be completed on either a computer or a smartphone. However, Only 346 questionnaires were received through this method. To obtain the 30 additional questionnaires needed, a second approach, meant to encourage entrepreneurs who had difficulties answering on an online platform to participate in the survey, was designed. Questionnaires were printed out and directly delivered to the respondents' addresses by the researchers themselves. It took two months (November 11, 2022 - January 11, 2023) for the researchers to receive 100.0% of the sample requirement ($n=376$).

- Statistical Analysis

This study reports descriptive statistics and multiple regression. The descriptive statistics consisted of mean, frequency, percentage, and standard deviation. Multiple regression was used to analyze the relationship among the six factors pertaining to social media usage and entrepreneurial opportunity recognition.

4. Findings and Discussion

- Descriptive Analysis

The results of the descriptive statistical analysis are shown in Tables 2 and 3. They provide an initial profile of the respondents in this study. As Table 2 indicates, a majority of the respondents were female ($n=246$, 65.40%) and 51.60 % of the respondents were between 31 and 40 years old ($n=194$). The level of education of 64.40% of the participants ($n=237$) was below a bachelor's degree.

Table 2: Respondents’ Profile

| Participants’ Information | | Frequency (n=376) | Percentage (pct=100) |
|---------------------------|-------------------------|----------------------|-------------------------|
| Gender | Male | 130 | 34.60 |
| | Female | 246 | 65.40 |
| Age | Under 20 years old | 12 | 3.20 |
| | 21-30 years old | 106 | 28.20 |
| | 31-40 years old | 194 | 51.60 |
| | 41-50 years old | 60 | 16.00 |
| | Above 51 years old | 4 | 1.00 |
| Education | Below bachelor’s degree | 242 | 64.40 |
| | Bachelor’s degree | 125 | 33.20 |
| | Above bachelor’s degree | 9 | 2.40 |

Table 3 provides information about the respondents’ businesses. More than half of them were classified as merchandise (n=220, 58.50%), followed by services (n=111, 29.50%), and manufacturing (n=45, 12.00%), by far the smallest sector. The monthly income level most representative was between \$1,000-\$3000 (n=164, 43.60%). Almost half of them indicated using 49.50% (n=186) indicated using Facebook in running their businesses (recall that s/ix social media platforms were listed in the survey). Most of them have been using social media for 3 or 4 years (n=161, 42.80%). When asked to point out one social media contribution to their businesses, a large proportion of entrepreneurs indicated attracting customers (n=122, 32.40%) and more than half ticked ‘good’ as an assessment of the level of social media contribution to their businesses (n=214, 57.90%).

Table 3: Information about Respondent’s Businesses

| Participations’ Information | | Frequency (n=376) | Percent (pct=100) |
|--|----------------------------------|----------------------|----------------------|
| Business Type | Merchandise | 220 | 58.50 |
| | Service | 111 | 29.50 |
| | Manufacturing | 45 | 12.00 |
| Business Income | Less than \$1,000 | 57 | 15.20 |
| | \$1,001-\$3,000 | 164 | 43.60 |
| | \$3,001-\$5,000 | 130 | 34.60 |
| | More than \$5,001 | 25 | 6.60 |
| Social Media Platform | Facebook | 186 | 49.50 |
| | Instagram | 44 | 11.60 |
| | Messenger | 66 | 17.60 |
| | Telegram | 64 | 17.00 |
| | TikTok | 16 | 4.30 |
| Years of Experience Using Social Media | Less than a year | 24 | 6.40 |
| | 1-2 years | 131 | 34.80 |
| | 3-4 years | 161 | 42.80 |
| | More than 4 years | 60 | 16.00 |
| Area of Social Media Contribution | Attract customers | 122 | 32.40 |
| | Increase market share | 99 | 26.40 |
| | Brand development | 39 | 10.30 |
| | Knowledge management | 42 | 11.20 |
| | Innovation | 15 | 4.00 |
| | Customer relationship management | 27 | 7.20 |
| | Competitive monitoring | 6 | 1.60 |
| | Collaboration and communication | 26 | 6.90 |

| | | | |
|--|-----------|-----|-------|
| Contribution level of Social Media to Business | Excellent | 115 | 30.60 |
| | Good | 214 | 56.90 |
| | Neutral | 31 | 8.20 |
| | Bad | 13 | 3.50 |
| | Worst | 3 | 0.80 |

- Multiple-Regression Analysis

Table 4 shows the results of the multiple regression analysis conducted in this study. The variance inflation factors (VIF), which, as recommended by Hair et al. (2010), should be lower than 10, range from 1.720 to 2.265. The VIF result indicates that the remaining predicted variables in the multiple regression model might contain all variables with undetected multicollinearity and independent variables. The results show a significant influence of social media usage on entrepreneurial opportunity recognition (F= 62.418, P=.000) with R-squared=0.504, suggesting that 50.40% of the data is predicted by the listed factors and the remaining 50.60% is influenced by various other factors not taken into consideration in this study. As determined by Hair et al. (2010), the strong, moderate, and weak models, respectively, are indicated by R-squared values of 0.75, 0.50, and 0.25. Considering the unique individual contributions of the predictors, the results indicate that Technical Adaptability (B=.134, t=3.378, P=.001), Access to Information (B=.222, t=3.694, P=.000), Cost Efficiency (B=.160, t=3.653, P=.000), Product Improvement & Development (B=.167, t=3.284, P=.001), and Promotion (B=.157, t=3.345, P=.001), positively predict entrepreneurial opportunity recognition. One dimension, Network Building, however, does not predict entrepreneurial opportunity recognition (B=.000, t=.010, P=.992).

Table 4: Results of Multiple-Regression Analysis

| Social media Usage | B | SE _b | t | P-value | VIF |
|--|------|-----------------|-------|---------|-------|
| Constant value | .627 | .191 | 3.281 | .001 | |
| Technical adaptability (TA) | .134 | .040 | 3.378 | .001* | 1.802 |
| Network building (NB) | .000 | .046 | .010 | .992 | 1.720 |
| Access to information (AI) | .222 | .060 | 3.694 | .000* | 2.265 |
| Cost efficiency (CE) | .160 | .044 | 3.653 | .000* | 1.827 |
| Product improvement & development (I&D) | .167 | .051 | 3.284 | .001* | 1.956 |
| Promotion (P) | .157 | .047 | 3.345 | .001* | 1.868 |
| R= .710, R-squared = .504, Adjusted R-squared = .496, F= 62.418, Sig= .000 | | | | | |

*Level of significance at 0.05

Note: Dependent variable: Entrepreneurial opportunity recognition (EOR)

Based on the data in Table 4, the following equation for multiple regression was developed for this study:

$$Y_{EOR} = 0.627 + 0.134X_{TA} + 0.222X_{AI} + 0.160X_{CE} + 0.167X_{PI\&D} + 0.157X_P$$

This study focuses on six critical dimensions of social media usage and provides empirical evidence to support the potential influence of social media usage on entrepreneurial opportunity recognition. Findings regarding the Technical Adaptability dimension of social media usage show that the basic technology literacy of Ratanakiri province entrepreneurs is such that they are likely to encounter few technical complications running their businesses. As a matter of fact, their adaptation to (and adoption of) social media technology is sufficient to enable them to recognize entrepreneurial opportunities.

This is consistent with Hossain and Rahman's (2018) conclusion that technical adaptability has a valuable impact on the availability of business opportunities on social media platforms, in this case, for female entrepreneurs in Bangladesh. It was also found that entrepreneurs' ability to recognize business opportunities was closely linked to the Access to Information and Cost Efficiency dimensions since entrepreneurs using social media can effectively gather information for opportunity-recognition purposes in a cost-effective manner. Cost efficiency also pertains to entrepreneurs' ability to collect and analyze valuable information to improve operations and reduce costs while increasing revenue and profits, which in turn is made possible by their easy access to information stored on social media. This is in keeping with Lim and Xavier (2015), who found that individuals can better recognize opportunities when they have easy access to information and prior knowledge. The findings of this current research study are also in line with the conclusions reached by Archdvili, Cardozo, & Ray (2003) and Baron (2006) in their studies that information availability is crucial for recognizing opportunities.

Another promising finding relates to the Cost Efficiency dimension as the use of social media can help entrepreneurs make the most of an opportunity and run a business in a profitable way. This finding is consistent with Al Harrasi et al.s (2021) determination that social media develop more efficient customer service communication and reduce production costs and with Basri's (2016) study, which concluded that social media provided a ground-breaking advantage for businesses seeking to lower costs and increase profitability. As to the Product Improvement & Development dimension, the results indicate that, customers' feedback on social media can trigger new idea generation which in turn enables entrepreneurs to develop new products and services that better meet customers' demands and needs. Conversely, it also enables them to inform customers about these improvements through the same channel thanks to back-and-forth communication. This is consistent with research on social media and entrepreneurship growth conducted by Jagongo and Kinyua (2013) and by Bhatia, Peng, and Sun (2013) who show that customer feedback on social media can help improve a business's products and services as well reputation among consumers

Finally, it is also clear from the results regarding the Promotion dimension, that promoting products and services on social media works better as compared to using traditional media due to its ease of access and convenience. To put it another way, social media is an easy marketing tool for executing publicity activities. This is consistent with Infante and Mardikaningsih's (2022) study, in which it was found that, compared to traditional marketing, social media promotion is more effective. This is also in line with a study conducted by Jones, Borgman, and Ulusoy's (2015) in which they determined that the regularity of promotion on social media can enhance a business's success by increasing traffic, brand recognition, and sales. As noted above, one dimension, Network Building, does not predict entrepreneurial opportunity recognition. The results in our study revealed that several entrepreneurs in the Ratanakiri province are likely not to use social media to create greater loyalty among customers in their businesses. Moreover, it also brought to light the fact that social media did not help entrepreneurs increase their visibility, take advantage of greater customer involvement, and build online followers. It was found that due to persistent misconceptions about social media, they were likely to keep focusing more on traditional ways to build a network; ways which they are accustomed to. This finding on the lack of influence of network building on entrepreneurial opportunity recognition diverges from earlier studies, including a study from Hossain and Rahman (2018), who found that social media provides a platform that allows entrepreneurs to build networks with customers and as such, helps to identify entrepreneurial opportunities and product attributes in need of improvement.

5. Conclusion and Recommendations

This study aimed to investigate the influence of social media usage on entrepreneurial opportunity recognition in Ratanakiri province, Cambodia. The results indicate that five out of the six dimensions used in this study to examine social media usage, namely, Technical Adaptability, Access to Information, Cost Efficiency, Product Development & Improvement, and Promotion, have a significant influence on entrepreneurial opportunity recognition. However, the sixth dimension, Network Building, does not significantly influence the recognition of entrepreneurial opportunities. The more intense entrepreneurs' use of social media, the greater the likelihood of their recognizing opportunities and the less likely their willingness to leverage being part of a community of entrepreneurial people. The results of this study have implications for future research and practice and significantly contribute to the body of knowledge on social media, entrepreneurial opportunities, and related fields of study.

Based on the findings in this study, the following suggestions can be made:

- Entrepreneurs should make sure to develop and update their social media technologies as it would increase efficiency.
- In the same vein, they should keep abreast of the fast-changing social media functions and stay up to date.
- They should keep searching information on the internet while remaining vigilant at the same time as online information can be unreliable, let alone the risk of information overload, which can lead to a waste of time.
- They should build networks on social media and meet new people with common areas of interest as it is easy for individuals to talk with one another.
- Finally, entrepreneurs in Ratanakiri province should take advantage of the Border Areas Development Project which supports the objectives of the Cambodia-Laos-Vietnam Development Triangle Area (Asian Development Bank, 2020). As part of this program, they could gain access to foreign markets where they could reach thousands more potential online customers who may not be otherwise able to become aware of their products.

Clearly, entrepreneurs have a lot to gain from using social media, not only to identify opportunities, but also to improve their products and services. Promoting their products or services through social media is economical and one of the most adaptable strategies entrepreneurs have for reaching their target market and increasing sales.

- Recommendations for Future Studies

This study has several limitations:

- Firstly, only one area in Cambodia, Ratanakiri province, was selected for collecting data, which may limit the generalization of the findings to other regions of Cambodia. Future studies should therefore compare the usage of social media in different economic potential locations to see how if there are distinctive level of entrepreneurial opportunity recognition.in Cambodia.
- Secondly, this study used a qualitative methodology, which may have limited the scope of the findings. Future researchers may thus use a qualitative approach to uncover additional relevant information.
- Thirdly, future research may investigate the diverse factors that influence entrepreneurial opportunities in specific business environments such as artificial intelligence.
- Finally, since Network Building was found to have no significance on entrepreneurial opportunity recognition and possibly affect the R-squared value, future research may explore this dimension in other contexts in order to determine whether the R-squared value is different as compared to this study.

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Guideline for Authors

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Topics discussed:

1. **Mission Statement**
2. **Periodicity**
3. **Article Submission**
4. **Review Process**
5. **Publication Ethics**
6. **Research Components**
7. **AJMI Style Guide**

1. MISSION STATEMENT

The goal of AJMI is to publish insightful, original and timely research that describes or potentially impacts management and/or innovation within the ASEAN context. AJMI is multidisciplinary in scope and encourages interdisciplinary research. The journal welcomes submissions in all topics related to management, as well as topics related to innovation; regardless of discipline or subject area.

Topics that are either distinctly ASEAN-related or regional or international in scope, but of relevance to ASEAN readers are encouraged. In addition to empirical research, AJMI accepts conceptual papers as well as papers that provide new insights into previous work and/or conventional wisdom. Also accepted are structured/systematic literature reviews that follow a specific methodology. Manuscripts that are simply literature reviews are generally discouraged.

Relevant topics include, but are not limited to:

- Management & Marketing
- Finance, Banking & Accounting
- Human Resource Management
- International Business Management
- Project Management
- Technology and Innovation Management
- Operations & Supply Chain Management
- Tourism, Leisure and Hospitality Management
- Entrepreneurship
- Organizational Behavior
- Business Ethics

2. PERIODICITY

Twice a year publication:

- First Issue: January – June (submission deadline in March).
- Second Issue: July – December (submission deadline in August).

3. ARTICLE SUBMISSION

All submissions and correspondence should be sent to ajmi@stamford.edu

A **strong standard of English** is expected, which means that authors who are non-native speakers may need to have their articles proofread by a qualified person prior to submitting them to AJMI.

Articles must be submitted electronically in Word format. To submit a paper, go to the Journal Management System at ajmi.stamford.edu and register as an author(s), and upload the file containing the paper.

Articles will be accepted to a maximum of 5,000 words (not including references).

Submission of an article to AJMI implies a commitment by the author(s) to publish in the journal.

In submitting an article to AJMI, the author(s) vouches that the article has neither been published, nor accepted for publication, nor is currently under review at any other location, including as a conference paper. If the article is under review elsewhere, it will be withdrawn from the submission list.

In addition, the author(s) also agree that the article shall not be placed under review elsewhere while the review process at AJMI is ongoing.

If the article is accepted for publication, the author's further guarantees not to withdraw it for submission to publish elsewhere.

4. REVIEW PROCESS

AJMI uses a “double-blind peer review system,” meaning that the authors do not know who the reviewers are and the reviewers do not know who the authors are. All submitted manuscripts are to be reviewed by three expert reviewers per paper. Reviewers are chosen on the basis of their expertise in the topic area and/or methodology used in the paper.

Each article is judged based solely on its contribution, merits, and alignment with the journal's mission. Should any revision be required, our instructions to authors are designed to move authors towards a successfully published article.

5. PUBLICATION ETHICS

The following outlines the ethical obligations of authors, reviewers, and AJMI Editor-in-Chief.

Duties of Authors

- Authors should:
 - Ensure that they are the sole creators of the article submitted or, in the case of co-authored articles, that all the authors have participated in the design and development of the paper submitted and taken responsibility for them;
 - Cite or quote accurately the work and/or words of others; and
 - Acknowledge ideas and previously published results by citing them in the article and listing them in the references.
- Authors of articles based on original research should:
 - Present an accurate account of the work performed as well as an objective discussion of its significance:

- Provide a detailed account of the underlying data used;
 - Ensure that the conclusion is based on the evidence presented and not on personal opinion;
 - Interpret and quote others' works accurately from original sources, not secondary ones, unless original sources are no longer available and a note to that effect is included in the article where appropriate; and
 - Indicate if a submission has been translated into English and provide the proper bibliographic notation for the original article in APA (*Publication Manual of the American Psychological Association*, 6th Edition) format.
- Authors should also disclose:
 - Any financial support provided for the research; and
 - Any potential conflict of interest when submitting an article. Conflicts of interest include, for example: employment; consultancy; stock ownership; honorarium; or paid expert testimony.
 - As mentioned in the section entitled 'Article Submission':
 - Submission of an article to AJMI for review implies a commitment by the author(s) to publish in the journal;
 - In submitting an article to AJMI, the author(s) vouch that the article has neither been published, nor accepted for publication, nor is currently under review at any other journal or as a conference paper. If the article is under review elsewhere, it should be withdrawn from submission;
 - The author(s) also agree that the article shall not be placed under review elsewhere during the review process at AJMI; and
 - If the article is accepted for publication at AJMI, the author(s) further guarantee not to withdraw it for submission from AJMI to publish it elsewhere.

Note: AJMI does not collect any processing or publication fees.

Duties of Reviewers

- Confidentiality:
 - As part of AJMI "double blind" peer review system (under which authors do not know who the reviewers are, and reviewers do not know who the authors are), reviewers are expected to uphold the confidentiality of the review process;
 - Reviewers should not discuss any aspects of the articles under review with other contributors to the journal;
 - Moreover, any unpublished material contained in an article under review may not be quoted or referenced by a reviewer without the express written consent of the author(s), which should be requested through the Editor-in-Chief of AJMI; and
 - Any information, data, or idea contained in the article under review must be kept confidential and may not be used for the personal advantage of the reviewers.
- Conflicts of Interest:
 - In the event a reviewer realizes upon receiving an article for review that: (i) he/she has been involved in any manner in the production of that article; (ii) knows the author(s) of the article; or (iii) for any reason is not in a position to provide an objective review of the article, he/she should inform the Editor-in-Chief and decline to review the article; and
 - Conflicts of interest may include, among others, collaborative or competitive relationships or connections with any of the authors, companies, or institutions connected to the article.

- Objectivity:
 - Articles submitted for review should be reviewed objectively solely based on the expertise of reviewers; and
 - Key criteria to be considered as part of the review process should include among others the articulation and coherence of the arguments and the strength of the evidence provided.
- Acknowledgement of Sources:
 - Reviewers should identify any important relevant published work that was not cited by the authors as part of the references; and
 - Reviewers are also expected to bring to authors' attention any substantial similarity or overlap between the article reviewed and any published work of which they have personal knowledge.

Duties of Editor-in-Chief

- Confidentiality:
 - As part of AJMI “double blind” peer review system, the Editor-in-Chief shall take all necessary steps to protect the identity of author(s) and reviewers throughout the review process.
- Conflicts of Interest:
 - In the event the Editor-in-Chief has a personal stake in the publication of an article, the Editor-in-Chief should recuse himself/herself from the review process for that article and a member of the Editorial Board should be nominated by the Editorial Board to step in.
- Objectivity:
 - Decisions regarding the publication of an article submitted for review should be made objectively; and
 - Critical factors to consider in deciding whether to publish an article should include, among others: the level of contribution of the article to its field; the quality of articulation of the arguments; and the strength of the evidence provided.
- Publication Decisions
 - As mentioned above, AJMI does not accept articles for review that have been published or are under consideration for publication in another journal;
 - AJMI Editor-in-Chief is ultimately responsible for deciding which of the articles submitted to the journal should be published;
 - Decisions should be guided by the recommendations of AJMI Editorial Board and constrained by legal requirements regarding libel, copyright infringement and plagiarism;
 - In making decisions, the Editor-in-Chief should always confer with other editors or reviewers.
 - The Editor-in-Chief is committed to taking any reasonable steps to identify and prevent the publication of articles where misconduct has occurred. In the event of documented violation of any of the above-mentioned AJMI policies, the following sanctions shall be applied:
 - (i) immediate rejection of the infringing article;
 - (ii) immediate rejection of every other submission submitted to AJMI by any of the author(s) of the infringing article; and
 - (iii) prohibition against all subsequent submissions to AJMI by the author(s), either individually or in combination with other authors of the infringing article, as well as in combination with any authors. The prohibition shall be imposed for a minimum of two years.

- In cases where the violation of any of the above policies is found to be particularly egregious, AJMI reserves the right to impose any sanction beyond those described above, which AJMI would deem appropriate under the circumstances.

6. RESEARCH COMPONENTS

The article should include the following components:

- An introduction
- A review of the relevant literature
- An outline of the research methodology/ research design
- Research findings
- A discussion of the results
- A conclusion and policy recommendations/ recommendations to managers

An emphasis should be placed on the discussion of the findings, the conclusion and policy recommendations/ recommendations to managers.

7. AJMI STYLE GUIDE

All of the following requirements need to be met before an article can be sent to reviewers.

If the formatting of a submitted paper does not match these requirements, **the paper will be returned without review for correction and re-submission.**

1. Format

- Must be a Word-compatible document (not a .pdf) and use the American Psychological Association (APA) Referencing Style as shown below (see sub-sections 6 and 7).

2. Title Page

- Uploaded separately from the abstract and body.
- Manuscript title (not in all capital letters).
- Title, name, affiliation and email address of all authors.
- Indicate clearly who is the corresponding author for journal communication.

3. Abstract

- Not more than 250 words.
- Should not include any information that would identify the author(s).
- Bold, Times New Roman, 12 point, no indentation.

4. Keywords

- Three to six keywords are required at the time of submission.

5. Body of the Paper

- A4 page size.
- Margin of 1" (2.5cm) on all four sides.
- Title of Article: Times New Roman font, 20 point.
- Section Heading: First letter of each word in capitals, bold 12 point font.
- Body Text: Times New Roman font, 12 point, single space between sentences.

6. In-Text Citations

- All in-text citations included throughout the article must have a corresponding full reference at the end of the manuscript body.
- Only direct quotes need a page number (not paraphrases).
- Direct Quotes
 - *One Author*
Author's Last name (Year) stated that "direct quote" (page number).

Isenberg (2007) stated that “international dispersion is on the rise” (p. 56). **Or**

“Direct quote” (Last name, Year, page number)

“International dispersion is on the rise” (Isenberg, 2007, p. 56).

- *Two Authors*

First author’s Last name and second author’s Last name (Year, page number) mentioned that "direct quote" (page number).

Isenberg and Kerr (2007) mentioned that “international dispersion is on the rise” (p. 56). **Or**

“Direct quote” (first author’s Last name & second author’s Last name, Year, page number).

“International dispersion is on the rise” (Isenberg & Kerr, 2007, p. 56).

- **Block Quotes**

If a quote runs on for more than 40 words:

- Start the direct quotation on a new line
- Indent the text roughly half an inch from the left margin
- Remove any quotation marks

Example:

As Krugman (2019) stated:

Maybe the larger point here is that there tends to be a certain amount of mysticism about trade policy, because the fact that it’s global and touches on one of the most famous insights in economics, the theory of comparative advantage, gives it an amount of mind space somewhat disproportionate to its actual economic importance. (p. 3).

- **Parenthetical Citing**

- *One Author*

Author's Last name (Year) in-text parenthetical citation (paraphrase).

Isenberg (2007) argues that cross-border migration is increasing.

or

Paraphrase (Last name, Year)

Cross-border migration is increasing (Isenberg, 2007).

- *Two Authors*

First author’s Last name and second author’s Last name (Year) paraphrase.

Kerr and Isenberg (2007) argued that cross-border migration is increasing.

or

Paraphrase (first author’s Last name & second author’s Last name, Year).

Cross-border migration is on the rise (Isenberg & Kerr, 2007).

- *Three to Five Authors*

All authors’ Last names (Year) paraphrase.

Kerr, Isenberg, and Steward (2007) argued that cross-border migration is increasing.

or

Paraphrase (all authors’ Last names, Year).

Cross-border migration is increasing (Isenberg, Kerr, & Steward, 2007).

For all subsequent in-text paraphrases, first author’s Last name followed by “et al.” and the publication year.

Isenberg et al. (2007) found that the event resulted in thousands of people flocking to the border.

or

The event resulted in thousands of people flocking to the border (Isenberg et al., 2007).

Full References

The following formatting rules apply:

- References appear at the end of the manuscript body in alphabetical order by the first word in the reference (usually the author's last name, sometimes the title).
- All references must have a corresponding in-text citation in the manuscript.
- If more than one work by an author is cited, list them by earliest publication date first.
- If the list contains more than one item published by the same author(s) in the same year, add lower case letters immediately after the year to distinguish them (e.g. 1983a).
- If there is no author, the title moves to the author position (filed under the first significant word of the title).
- Reference list entries should be indented half an inch or 12 mm (five to seven spaces) on the second and subsequent lines of the reference list for every entry - a hanging indent is the preferred style (i.e. entries should begin flush left, and the second and subsequent lines should be indented).
- Double-space all reference entries.

Follow APA Referencing Style format for each source type listed as shown below. For any source type not shown below, go to the APA website for references.

- Book

- *One Author*

Author, F. M. / Organization. (Year). *Topic Title*. City: Publisher.

Nagel, P. C. (1992). *The Lees of Virginia: Seven generations of an American family*. New York: Oxford University Press.

- *Two Authors*

Author, F. M., & Author, F. M. (Year). *Topic Title*. City: Publisher.

Nagel, P. C., & Sampson, T. (1995). *Seven generations of an American family*. New York: Oxford University Press.

- *Three Authors*

Author, F. M., Author, F. M., & Author, F. M. (Year). *Topic Title*. City: Publisher.

Nagel, P. C., Sampson, T., & Hubbard, A. J. (1992). *The Lees of Virginia: Seven generations of an American family*. New York: Oxford University Press.

- Journal

Author, F. M. (Year). Title of article. *Title of Journal*, vol. (issue), pp xxx-xxx.

Turner, R. A. (2007). Coaching and consulting in multicultural contexts. *Consulting Psychology Journal: Practice and Research*, 59(4), 241-243.

- Website

Author, F. M./ Organization. (Year of Publication). Web page title. Retrieved (Date) from: URL Address.

Bogati, S. (2013, October 14). Hospitality Industry in Nepal. Retrieved November 3, 2018, from: <http://hospitalityindustryinnepal.blogspot.com/>

- Newspaper

Author, F. M. / Organization (Year, month, day published). Title of article. *Title of newspaper*, page.

Parker, T. D. (2009, August 3). Getting rid of side stitches. *The Washington Post*, p. E1, E4.

7. Formatting Figures and Table

There are two different styles for graphics in APA format: **Figures** (charts, images, pictures) and **Tables**.

- Figures
 - The first graphic (chart, drawing, or image) will be labeled as Figure 1 and be the first one mentioned in the article.
 - Subsequent ones will follow in the appropriate numeral order in which they appear in the article.
 - Follow APA Referencing Style format for each source type listed as shown below. This means that both the Title and the Source are written below the Figure.



Figure 1: Name of Picture

Source: Author’s Last name OR Organization’s name (Year, Page number OR Online)
Khomani (2017, p. 137)

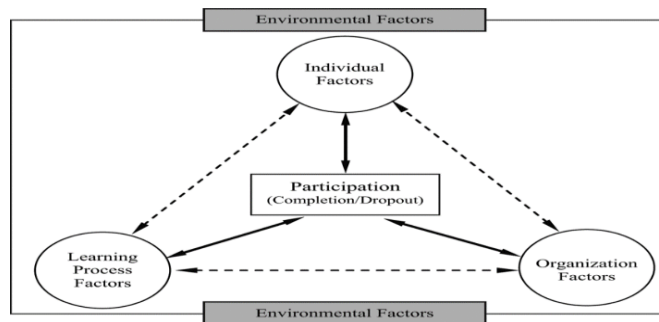


Figure 1: Conceptual framework

Source: Author’s Last name OR Organization’s name (Year: Page number OR Online)
Wang (2019: p. 45)

- Tables
 - Tables are labelled separately to Figures and should follow the instructions below.
 - The first Table will be labeled as Table 1 and be the first Table mentioned in the article.
 - Subsequent ones will follow in the appropriate numeral order in which they appear in the article. This means that Tables are labelled separately to Figures.
 - The APA Referencing Style format for a Table differs to that of a Figure. A Table has the Title above the Table, and the Source will be listed below.

Table 2: Domestic Tourism in Ayutthaya and Sukhothai in 2004

| Type of Data (2004) | Ayutthaya | Sukhothai |
|---------------------|-----------|-----------|
| Visitor Thai | 3,023,933 | 1,915,975 |
| Foreigners | | 1,107,958 |

Source: Author’s Last name OR Organization’s name (Year: Page number OR Online)
Tourism Authority of Thailand (2005: Online)

For any source type not shown above, go to the APA website for references.