

Artificial Intelligent (AI), Effectuation Theory, and International Opportunity: A Powerful Approach to Global Entrepreneurship

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Abstract:

A potent strategy for international business at the crossroads of Artificial Intelligence (AI), Effectuation Theory, and Cross-Border Opportunities. The rapid development of AI technologies has changed several fields, including business, by opening previously inaccessible opportunities. However, Effectuation Theory provides an alternative viewpoint on entrepreneurs' decision-making processes by placing an emphasis on making do with what's at hand and developing new opportunities through repeated trial and error. Entrepreneurs can improve their processes of opportunity discovery and exploitation in a global setting by merging AI with Effectuation Theory. Entrepreneurs can now analyse massive volumes of data, see trends, and make educated judgements about market entrance strategies and business models with the use of AI-powered tools like natural language processing, machine learning, and data analytics. This document summarises the most important aspects of this effective strategy for international business. Specifically, it looks at how AI can improve the effective logic's four stages—finding a tolerable loss, picking a good partner, making a valuable contribution together, and capitalising on a lucky break. In addition, it investigates how AI might improve the speed and accuracy with which foreign business opportunities are spotted by reducing the risks normally associated with doing business abroad. This study adds to the literature by outlining a complete framework for studying international opportunity in the context of artificial intelligence, effectuation theory, and other related fields. For business owners and government officials, it provides actionable advice on how to leverage AI to seize overseas opportunities, encourage entrepreneurship on a global scale, and propel economic expansion. In conclusion, this research promotes the strategic use of AI in the entrepreneur's toolkit so that rising global markets' full potential can be realised and the difficulties of the global business landscape can be successfully navigated.

Keyword: Artificial Intelligent, Effectuation, Global Opportunity, Malaysia

Introduction:

Entrepreneurship is an ever-evolving field that requires a deep understanding of market trends, consumer behaviour, and the ability to take calculated risks. As the world becomes increasingly interconnected, global entrepreneurship is becoming an essential part of the entrepreneurial landscape. However, entering international markets comes with significant challenges, including navigating cultural differences, legal frameworks, and market complexities. To succeed in this context, entrepreneurs must embrace a flexible and adaptable approach that leverages

both traditional entrepreneurial theories and new technologies, such as big data and Artificial Intelligence (AI).

Technologies like AI has become a buzzword in recent years, with businesses across industries adopting it to analyse large amounts of data and identify patterns and trends. Over \$40 billion is spent on strategic acquisitions each year by digital giants like Google, Amazon, Microsoft, Alibaba, and Baidu to advance their AI projects and acquire access to vital AI technology created by early-stage firms (Bughin, et al., 2017). By 2023, it is expected that the global income from AI applications and

systems would have increased from \$15 billion to over \$57 billion. In addition, yearly venture financing for AI firms surged from \$1.7 billion to more than \$15 billion between 2012 and 2017. With the goal of creating a \$1 trillion AI economy by 2030, China has invested cumulatively more than \$300 billion in AI technology (Barhat, 2018; Townsend and Hunt, 2019). When applied to the context of international entrepreneurship, AI can help entrepreneurs identify potential international markets and evaluate their feasibility in the specific market. At the same time, effectuation theory, an approach to entrepreneurship that emphasizes the importance of leveraging existing resources and partnerships, can provide a flexible and adaptable framework for entrepreneurs to succeed in international markets.

This study explores the intersection of AI, effectuation theory, and international opportunity. Specifically, this study examines how international entrepreneurs can use AI to analyze data, identify potential international markets, and apply effectuation theory to develop a flexible strategy for entering and succeeding in those markets. We will discuss the benefits and limitations of this approach and explore the implications for future research and practice in the field of global entrepreneurship.

The study will begin with an overview of the current state of research on AI, effectuation theory, and international opportunity, and provide a brief introduction to each of these concepts. We will then discuss AI importance in entrepreneurship, and how it can be used to identify potential international markets and evaluate their feasibility. Next, we will explore how effectuation theory can be applied to develop a flexible and adaptable approach to entering and succeeding in international markets. Finally, we will conclude with a discussion of the implications of this approach for entrepreneurs, investors, and policymakers interested in promoting global entrepreneurship.

Literature Review

AI in entrepreneurship

Artificial intelligence (AI) is a rapidly evolving field that has the potential to revolutionize various industries and fields, including entrepreneurship. Entrepreneurship theory places a strong emphasis on taking entrepreneurial action, exercising judgment, and making decisions when faced with ambiguity (Townsend et al., 2018). AI can analyze and process vast amounts of data, identify patterns and trends, and make predictions based on this information. With the development of technology like AI, entrepreneurial processes and new venture

formation have become less challenging. It facilitates, mediates, and operates to encourage the growth of global opportunities. The potential of AI in supporting entrepreneurial processes and its capacity for offering solutions have been underlined by qualitative research of 500 companies from France, Germany, and Sweden (Schiavone et al., 2022). According to Nadeem Khalid et al. (2020), AI is the most significant means of facilitating better business decisions and fostering entrepreneurial success in the global market. However, it also depends on the knowledge of the entrepreneur in technology. A strong knowledge base in AI can drive the development of product innovation, technology innovation, and market innovation, all of which can provide significant competitive advantages. In today's rapidly evolving technological landscape, entrepreneurs who can effectively leverage the power of AI are better positioned to identify and exploit new opportunities, improve product and service offerings, and optimize operational efficiencies. Therefore, acquiring a solid understanding of AI and its various applications is essential for entrepreneurs looking to stay ahead of the curve and remain competitive in their respective markets.

With the advent of artificial intelligence (AI), the entrepreneur has gained various benefits to pursue their potential market or feasibility. For example, the field of data analysis has undergone a significant transformation. AI can analyze large volumes of data, identify patterns and trends, and make predictions based on this information. In entrepreneurship, this can provide valuable insights into consumer behavior and preferences, market trends, and potential opportunities (Navennetha et al., 2022). The use of AI in data analysis can also help entrepreneurs optimize business operations, improve efficiency, and reduce costs. With the increasing availability of data and the advancements in AI technology, the potential for AI to revolutionize data analysis in entrepreneurship is significant. It helps to create accurate value for customers and poses many profound challenges and risks (Noah Castelo et al, 2019).

The other example is the use of artificial intelligence (AI) which can support decision-making processes in entrepreneurship by providing relevant and timely information to entrepreneurs. This is very much in relation to a business that targeted or has a wide customer base. AI can analyze large amounts of data and provide insights into market trends, consumer behavior, and other key factors that can influence business decisions. AI can provide predictive analytics, which can assist in forecasting future outcomes based on historical

data. AI can also support decision-making by automating routine tasks, which can free up time for entrepreneurs to focus on more strategic activities.

International entrepreneurs stand to gain significant benefits from incorporating artificial intelligence (AI) into their marketing strategies. AI has the potential to revolutionize marketing by providing invaluable insights into consumer behavior and preferences, optimizing advertising campaigns for maximum impact, and enhancing the overall customer experience. By leveraging AI-powered tools and techniques, entrepreneurs can gain a deeper understanding of their target markets, tailor their products and services to meet specific customer needs, and ultimately gain a competitive edge in the global marketplace. As such, the adoption of AI in marketing strategies is becoming increasingly important for international entrepreneurs looking to expand their businesses and stay ahead of the competition. AI-powered tools can analyze large amounts of data from multiple sources, including social media, customer interactions, and sales data, to identify patterns and trends. These include the need for ethical considerations, the potential for AI to replace human creativity and intuition, and the need for appropriate frameworks to manage the use of AI in entrepreneurship. This research provides a useful framework that combines AI, effectuation, and global possibilities, offering knowledge that entrepreneurs looking to take advantage of new trends and opportunities in the global market may use. The study gives a distinctive viewpoint on how AI may be used to improve the efficacy of effectuation-based decision-making processes, therefore helping entrepreneurs to effectively traverse the complicated and uncertain terrain of global business. This is accomplished by integrating these three essential components. In the end, the framework presented in this study has the potential to assist entrepreneurs in creating more creative, effective, and efficient approaches to global entrepreneurship, making it a crucial tool for anyone hoping to succeed in the dynamic and quickly changing business environment of today.

Effectuation theory in entrepreneurship

In studies looking at how global startups companies are expanding internationally; effectuation theory has become more and more prevalent. Sarasvathy proposed this effectuation framework in 2001. This theory, which emphasizes the significance of human activity in influencing the future, is seen as a "general theory of decision-making in uncertain situations". Sarasvathy (2001,2008) claims that whereas effectuation processes concentrate on

choosing potential effects that may be produced using a given set of methods, causation processes concentrate on choosing ways to accomplish a specific effect. Effectuation theory could be an appropriate foundation for internationalization theory, as both concepts involve decision-making in the face of uncertainty. Jones and Coviello (2005) and Schweizer et al. (2010) have suggested that the uncertainty inherent in internationalization can be addressed using the principles of effectuation. In fact, Jones and Coviello (2005) have characterized internationalization as an "entrepreneurial process of behavior in time" and have positioned INVC as a process that requires dealing with uncertainty.

The purpose of this work is to clarify how effectuation theory aids international entrepreneurship (IE) scholarship in responding to important concerns about how AI facilitates the process of finding international opportunities via the prism of effectuation theory by conducting a comprehensive assessment of the literature.

AI, Effectuation, and International Entrepreneurship

Recent studies have examined the relationship between artificial intelligence (AI) and global entrepreneurship, showing AI's potential to promote global entrepreneurship and enhance business success (Zhang and Burg, 2020). Several academics have claimed that AI can assist businesses in overcoming the difficulties associated with global opportunities, including linguistic and cultural obstacles. For instance, AI-powered chatbots may offer multilingual customer support and assist businesses in customizing their goods and services for regional markets. AI may also help businesses manage their international supply chains by supplying real-time information and foreseeing possible interruptions.

Iterative and inductive decision-making within the context plays a crucial role in coevolving opportunities. Effectuation theory posits that opportunities are seized amidst uncertainty, where neither the possible outcomes nor the associated probabilities are known (Alvarez et al., 2013). Traditionally, the discovery or creation of entrepreneurial opportunities was viewed as a social-cognitive process exclusive to human entrepreneurs. However, with the emergence of AI as an operant resource, this perspective has shifted. AI is now seen as capable of identifying and creating new pathways for entrepreneurial opportunities in international markets.

Entrepreneurs that going to start a business in the international market, are often facing challenges, one is limited with potential market information and another one is information processing

constraints. AI has provided a great possibility for these challenges which allows international entrepreneurs to explore data and get market information. Unlike the conventional approach, AI can support entrepreneurs to learn, adapt and improve to explore new potential opportunities which we believe are crucial aspects of effectuation. It transforms the entrepreneurial process by identifying and capitalizing on new international opportunities and overcoming the limitation of human cognition.

Methodology

The study is exploratory in nature and aims to generate theory rather than generalize results to a larger population (Eisenhardt, 1989; Gibbert et al., 2008). Our approach is a multiple-case study (Yin, 2009) to validate the theoretical proposition. There are two reasons why the qualitative method of this study: (1) it is the most effective approach to answer the research question of "how" (Yin, 2009), and (2) case studies allow for the inductive collection of new insights (Sutton, 1997) that were previously unknown to the researchers.

The many examples may specifically show how AI has been applied to international entrepreneurship and evaluate our theoretical claims. We are referring to AI, which high-tech firms have lately employed to enter the global marketplace. Several businesses that employed AI were global startups or corporations that were born globally. Based on theoretical sampling, which is regarded as sound scientific practise in case studies (Piekkari et al., 2010), we chose four case businesses (Eisenhardt and Graebner, 2007). Therefore, rather than using a statistical sampling logic (Bryman, 2003), we employed a non-probability sampling approach (Silverman, 2005). Therefore, rather than creating a statistically representative sample, we chose a set of firms that were born globally and employed AI to promote their goal of global possibilities. We established specific criteria for selecting companies, requiring a minimum of 4 years of operation in the global market and at least 35% of their profits to be generated from international operations.

To prove the internal validity of the research, each case was considered as a distinct experiment and then compared with other chosen examples as per Yin's (2009) guideline (Beverland and Lindgreen, 2010; Gibbert et al., 2008). NVIVO was used to gather and analyse the data. The procedures and venture creation processes put out by Chalmers et al. (2020) and von Briel et al. (2018) were used to code data with the help of NVIVO.

Findings and Proposition Assessments

THEME 1: Existing Resources

Company A has adopted the A Machine Learning Studio, a cloud-based platform that provides simple and user-friendly tools to develop predictive models and recommendation systems. This has enabled them to gain insights into customer behavior and future trends by analyzing datasets without any resources especially requiring any coding skills or additional hardware/software to understand the trend. The platform has proved to be an affordable and efficient solution for the company as it eliminated the need for manual market research and surveys, which used to be a time-consuming and challenging task. As one of the company representatives stated, *"We are extremely pleased with the AM learning software as it has simplified our day-to-day workflow and allowed us to gain valuable insights without requiring any technical expertise."* In a similar vein, the CEO of Company B highlights that they didn't spend any money to understand the market needs. AI tools help them to get potential market and competitor analysis. *"We managed to access a market like Indonesia and Thailand with AI. We get the information which makes us keep informed strategic choices in our business,"* Company C said; they use an AI-driven chatbot to transform customer support. They didn't hire any staff or invest in any new resources. They have fired some staff and changed company strategies to be more opportunistic with the support of AI software. The entrepreneur said *"We don't need staff, we were forced to fire some staff...we acquired some AI tools to be resources for us as it has turned out to be our strategies...Also,* the CEO of Company E said, *I have some experience in developing software so it is very easy for me to use this AI tool..."* The CEO of Company G said, *"I have visited Thailand previously and contacted a few people there..."*

The ideas of effectuation theory are adopted by entrepreneurs, who place a strong emphasis on resourcefulness and utilizing readily accessible resources to generate possibilities. Entrepreneurs may efficiently discover and use their available resources to develop their business ventures with the aid of AI technology. However, we can see AI is used by entrepreneurs to optimize resource allocation and utilization, in line with the main principles of effectuation theory. Utilizing the resources that are already available and the knowledge of the entrepreneurs is one of the crucial actions that can be performed in this situation since some of them have technical and international experience that is consistent with the idea of effectuation. They may assess if they are indeed fixing the problem by comparing the data provided by AI with the results from their own

experience. This is similar to what Zhang and Burg (2020) explained in their recent finding about genetic algorithms in AI creating solutions for complex, nonanalytical, and ill-structured problems and developing additional designs for effectuation.

THEME 2: Market Analysis

Through the examination of past data and patterns, AI tools have the capability to forecast industry trends and the customer wants. Entrepreneurs may use this prediction power to gain significant insights into possible changes in global marketplaces. Entrepreneurs will research market trends or consumer demand to design a strategy that is recognised as a causal approach. By making use of these insights, entrepreneurs may proactively modify their goods and services to remain ahead of the competition and satisfy changing client demands and create opportunities. Entrepreneurs may use this predictive capacity to make well-informed choices about product development, market entrance tactics, and expansion plans in global marketplaces. Entrepreneurs can successfully traverse the global business landscape, grasp opportunities, and fuel the success of multinational initiatives by utilizing AI-driven predictive analysis. CEO from Company D said, *"We modify our products according to our customers. For instance, in Indonesia, there is a demand for more affordable software, whereas, in the UK, customers prioritize software with better value...so usually we develop plan for it..."* Company E said, *"We need to provide special preferences and we need to do a lot of analysis... AI really helps me to do this service..."*. Entrepreneurs can do the real-time from the potential customers, quickly identify the area of improvement and adjust their marketing goals and objectives accordingly. Basically, entrepreneurs open opportunities from unexpected events. Entrepreneurs are open to opportunities that occur from unanticipated circumstances. They continue to be open and responsive to the opportunities that unexpected events may provide. The CEO from Company F explained that we do a lot of analysis but everything through technology that they have. For example, *"dxFeed support us to provide market data..., google trend give us rough idea about trend in the market... and we are very flexible in choosing free and paid software"*.

This flexibility enables entrepreneurs to spot and grasp new opportunities for development and innovation, even when circumstances diverge from their original intentions. Entrepreneurs may turn unforeseen circumstances into chances for success by keeping an open mind and using their ingenuity. An essential aspect of the entrepreneurial spirit is

the capacity to welcome the unexpected, which promotes perseverance in the face of difficulties. This is like what Lupp (2023) highlighted in his study. He further his study in effectuation and explained the importance of machine learning and AI as the potential to go over entrepreneurs' restricted information processing and local search techniques and transform the invention process.

THEME 3: Mitigating Global Risk and accelerating global market entry.

To efficiently manage global risks, entrepreneurs blend AI risk assessment models with effectuation principles. Achieving success in global business requires entrepreneurs to make thoughtful decisions and create backup plans. AI tools help detect possible risks and uncertainties in foreign markets. One of the examples is from the CEO of Company B who said, *"I firmly believe that AI is a game-changer in mitigating international risks... AI made us ask our customers what they want and when they want it..."*

Company D said, *"...I was able to understand what was in the customer's mind about my services..."* Company F said, *"We have and use Chatbot and virtual assistant that helps us to understand what client want"* Many entrepreneurs from our cases said by automating repetitive operations and optimizing operational procedures, businesses may hasten the process of entering international markets. Chatbots and virtual assistants powered by AI can improve cross-cultural interaction and customer service while guaranteeing a smooth global consumer experience.

THEME 4: Personalised International Marketing

Entrepreneurs may customize global marketing efforts by integrating AI-driven data analytics, which enables them to cater their messaging and products to certain market niches. The effectuation theory acts as a guiding concept, assisting entrepreneurs in co-creating value with customers around the world. By utilizing AI information, business owners may modify their offerings and marketing plans to consider regional preferences, strengthening their relationships and resonating with global target consumers. The successful integration of AI-driven analytics with effectuation theory increases the impact of entrepreneurial initiatives, resulting in higher levels of consumer engagement and better global business outcomes. For example, the CEO of company A said, *"AI is our major instrumental in our business journey to success especially in marketing"*. Similarly, the CEO from Company C said, *"We work more with AI in marketing to create slides, content and get some*

ideas to get some attention from global customers...". Similarly, the CEO from Company H: *I use AI to create content for marketing.... try to get some idea and use it for advertisement...*". It is very clear that entrepreneurs are urged by Effectuation to take measured risks and see obstacles as teaching experiences. Entrepreneurs may test out various techniques, messaging, and products in personalized international marketing while keeping an eye on how foreign clients react. By adopting an attitude of "affordable loss," business owners may swiftly modify their marketing strategies in response to in-the-moment feedback, honing their efforts to maximize client involvement and happiness. Karami, Baber and Ojala (2022) captured similar findings in their study on Canada and Japan. This study emphasizes how effective business model innovation is in frontier markets and how it plays a part in exploiting opportunities. To develop effective business models that can adapt to and flourish in many environments, it examines how entrepreneurs negotiate the uncertainties and challenges of these marketplaces.

Conclusion and Limitation

The way AI technology supports and encourages global entrepreneurship, particularly in decision-making logic, is clear evidence of the connection between AI and global entrepreneurial activity. Global entrepreneurs may acquire and analyse enormous volumes of data using AI, which gives them significant insights into customer demands, product improvement, and efficient coping mechanisms for ambiguous circumstances. Global entrepreneurs are empowered by AI technology's enhanced analytical and predictive capabilities. With AI-driven data analysis, entrepreneurs acquire a greater grasp of customer demands and preferences in various foreign marketplaces. This knowledge increases their chances of success by enabling businesses to customize their goods and services to satisfy the unique requirements of various consumer groups.

Additionally, AI-driven decision-making tools give entrepreneurs useful knowledge and tactics to lessen uncertainties that are frequently experienced in global trade. Entrepreneurs may obtain real-time market trends, competition data, and consumer feedback by utilising AI's capabilities, allowing them to make decisions with the least amount of risk and uncertainty. AI improves the entrepreneurial environment by promoting information exchange and cooperation among international entrepreneurs. Entrepreneurs may connect with peers, discuss best practises, and access resources using AI-powered platforms and

networks, building a community of support and growth.

The primary aim of this paper is to emphasise the significant role of AI in revolutionising several facets of global entrepreneurship. It provides many entrepreneurs with significant benefits in preventing and resolving problems so they may choose more wisely to pursue the global opportunity. Given that research on AI and entrepreneurship is still in its early stages, it is crucial to maintain focus and offer a deeper understanding by applying qualitative approaches from other nations and how it has been utilised in their respective contexts. These investigations will contribute to a greater understanding of the role that AI plays in entrepreneurship, particularly when weighing possibilities and risks.

Equally crucial is the utilisation of facts to support and validate our claims in a specific situation. Future researchers should concentrate on quantitative studies that can help the process of international opportunity identification or exploitation and corroborate our results by combining AI and effectuation. Numerous more factors that influence the choices made by international entrepreneurs include mental distance, domestic market institutions, entrepreneurial orientation, and many others.

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