# Artificial Intelligence Adoption in Business: Influencing Factors among UTHM Student Entrepreneurs

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**Abstract**

This study examines the factors influencing the adoption of Artificial Intelligence (AI) in business among student entrepreneurs at Universiti Tun Hussein Onn Malaysia (UTHM). Specifically, it investigates the roles of dynamic capabilities, entrepreneurial orientation, and customer-centric management systems in influencing AI adoption. A quantitative approach was employed, utilizing a survey distributed to all student entrepreneurs in UTHM, with 101 respondents participating. Data were collected and analyzed using SPSS to assess the relationships among the variables. The findings indicate a positive and significant correlation between dynamic capabilities, entrepreneurial orientation, and customer-centric management systems and AI adoption. Specifically, dynamic capabilities enhance adaptability and innovation, entrepreneurial orientation drives risk-taking and proactive AI adoption, and customer-centric management systems improve customer engagement and satisfaction through AI-driven solutions. These insights underscore the critical role of organizational strategies and AI technologies in enhancing business performance and competitiveness. The study provides practical recommendations for educational institutions to promote AI adoption among student entrepreneurs and suggests directions for future research to address study limitations.

**Keywords:** Dynamic Capabilities, Entrepreneurial Orientation, Customer-Centric Management System, AI Adoption

## Introduction

One of the major competitive trends in business is artificial intelligence (AI) (Davenport, 2018). AI can be defined as a collection of technologies and tools designed to improve and support organizational performance (Alsheibani et al., 2018). This enhancement is achieved through the development of "artificial" systems capable of solving complex environmental issues. In this context, "intelligence" refers to the imitation of human cognitive abilities. Strategic planning is crucial and has been successfully employed by firms to gain a competitive advantage (Varian, 2018). According to Ishengoma and John (2024), AI offers numerous benefits to businesses. These include increasing competitiveness, adapting to changing markets, and upgrading customer experiences, decision-making processes, and operational efficiency. By utilizing data analytics, automation, and predictive capabilities, AI helps firms overcome resource limitations, foster innovation and development, and achieve sustainable growth in a dynamic business environment. about it enables forms to analyze market trends, allocate resources more effectively, and identify new business opportunities.

The business world is changing rapidly due to AI. Its powerful ability to process data and make intelligent decisions offers great opportunities for businesses. But while AI is widely seen as a key driver of business change, many organizations and entrepreneurs face challenges in adopting it. These challenges often relate to aligning AI with business strategies, building dynamic capabilities, and fostering an entrepreneurial mindset. Not only that, but there is also a lack of research (Alawamleh et.al, 2024) showing how AI directly impacts business performance and customer satisfaction, leaving entrepreneurs uncertain about its long-term benefits. Moreover, based on the McKinsey Global Survey (2023) on AI adoption, it reported that only 23% of businesses have successfully scaled AI in their operations, further demonstrating the need to understand key adoption factors.

Research shows that AI adoption depends on several factors, including technology readiness, corporate culture, market demand, etc. For entrepreneurs, especially student entrepreneurs, AI provides a competitive edge by automating operations, analyzing market trends, and optimizing customer interactions. Small businesses and startups increasingly use AI-powered tools such as chatbots for customer service, predictive analytics for market insights, and automatic to streamline operations. These applications help young entrepreneurs reduce costs, improve efficiency, and able to compete with larger firms. Dynamic capabilities, entrepreneurial orientation, and customer-centric management systems are considered important for successful AI adoption in a fast-changing environment. However, most studies (Alawamleh et al, 2024; Teece, 2007), focus on improving the technology itself and pay little attention to how AI can work in conjunction with these factors. While the potential of AI to improve efficiency and customer experience is widely recognized, there is limited quantitative research on its impact on business performance and customer satisfaction.

In particular, the interplay between technological advances, dynamic capabilities, entrepreneurial orientation and customer-centric management systems has not been fully explored in existing research. Dynamic capabilities are a firm's ability to identify market changes, deploy resources, and respond quickly, while entrepreneurial orientation reflects a firm's propensity for innovation, risk-taking, and initiative. There is still a lack of systematic research on how both play a role in AI adoption and how they synergize with customer-centric

management system goals to drive successful AI adoption. The lack of understanding of these factors not only hinders the widespread adoption of AI in businesses but also makes it difficult for organizations to strike a balance between innovation and efficiency when adopting AI (Elia et. al., 2024).

Research on the specific measurable impact of AI on business performance, customer satisfaction, and competitive advantage is also more limited. While many organizations have attempted to improve operational efficiency and customer experience through the adoption of AI technologies, the long-term impact on key performance indicators such as revenue growth, customer retention, or market share is not supported by sufficient empirical data. This lack of research increases the uncertainty of business decisions and exposes them to greater risk when assessing the costs and benefits of AI. In addition, how to flexibly apply AI technology to different business scenarios is a practical challenge that needs to be addressed, given the different technological needs and competitive landscapes of different industries and markets. For instance, AI-powered chatbots in small businesses reduce response time by 80% by (IBM,2023), demonstrating clear advantages in customer service. Therefore, this study aims to examine the relationship between dynamic capabilities, entrepreneurial orientation, and customer-centric management systems in the adoption of AI in business. These findings will not only provide new insights for researchers, but also practical guidance for companies on how to use AI effectively and align it with their strategies. In doing so, the study will help organizations understand the long-term value of AI and develop better strategies for deploying and managing this technology.

While AI is widely acknowledged as a major driver of business transformation, significant gaps remain in understanding the key factors that influence its adoption. Specifically, how dynamic capabilities, entrepreneurial orientation, and customer-centric management system work together with AI implementation and their effects on business strategies and performance have not been thoroughly explored. Moreover, there is a lack of quantitative studies assessing the impact of AI on customer satisfaction and market competitiveness. These gaps not only limit academic understanding of AI's interaction with business strategy but also create challenges for companies in developing effective AI adoption strategies.

The main goal of this study is to address these gaps and offer new insights for both researchers and practitioners. By combining dynamic capabilities, entrepreneurial orientation, and customer-centric management system, this study develops a new theoretical framework to explain how these factors interact in AI adoption. Through a detailed analysis of the key mechanisms driving AI implementation success, this research will strengthen the theoretical foundations of AI applications and contribute new ideas to the fields of organizational behavior, strategic management, and technology innovation. Additionally, the study will measure AI's impact on business performance and customer satisfaction, introduce improved evaluation methods, and provide valuable data and references for future research. By focusing on AI's role in small businesses, startups, and entrepreneurial ventures, this study will offer insights into how AI enhances business decision making, improves efficiency and strengthen customers relationships. These findings will be particularly useful for student entrepreneurs, equipping them with the knowledge to leverage AI for sustainable business growth in an increasingly competitive market.

## Literature Review

### Adoption of AI Practices

AI practices involve the use of current technology and algorithms to automate and improve commercial processes. Furthermore, AI is crucial in business since it improves data analysis, decision-making, and operational efficiency. In business, it assists companies in refining marketing efforts, better understanding customer behavior, and boosting overall performance. AI has become an essential instrument for organizations that want to remain competitive and keep up with the fast-changing world of technology (Qi et al., 2023).

The adoption of AI practices has been studied using the diffusion of innovation hypothesis, which demonstrates how new technologies are accepted and integrated into business. This hypothesis claims that the mixture of relative advantages, compatibility, difficulty, trialability, and observability contributes to the adoption of AI practices' rates. AI methods provide evident benefits, such as greater efficiency and decision-making, which encourages their adoption by firms, especially those run by student entrepreneurs (Qi et al., 2023).

Another theoretical viewpoint is the unified theory of acceptance and use of technology (UTAUT), which investigates the behavioral intention to utilize technology. UTAUT defines technology adoption as performance expectancy, effort expectancy, social impact, and enabling variables. AI practices are consistent with these characteristics since they deliver immediate benefits like enhanced performance and customer feedback, while advances in user-friendly AI interfaces lessen the work necessary for adoption (Qi et al., 2023).

The adoption of AI practices has been intensively researched due to its adverse influence on e-commerce and business operations. Modern AI and information technology breakthroughs have made a substantial contribution to the development of solutions for product marketing, corporate performance improvement, and consumer behaviour comprehension. According to Qi et al. (2023), AI enables businesses to harness data-driven insights, personalize customer experiences, and optimize their marketing strategies, making it a critical tool for success in today's digital economy as of now. Several studies highlight the versatility of AI tools in meeting the diverse needs of businesses. Moreover, Qi et al. (2023) have stated that AI technologies have the potential to increase operational efficiency and support decision-making processes. These technologies assist firms in analyzing large volumes of data to identify trends, forecast consumer preferences, and simplify procedures. Such achievements highlight the importance of artificial intelligence in developing innovation and guaranteeing businesses' competitiveness.

### Dynamic Capability

The efficacy, efficiency, and quantity of capabilities need to identify the new opportunities, develop its capabilities, and adjust to quickly changing business environments should be considered aspects that define its dynamism. (Teece, 2010). To increase competitiveness and improve business performance, they are essential for developing innovations and improving flexibility within an organization (Teece et al., 2010). When it requires developing innovations that enhance productivity, integration, and business reorganization, the organization could be needed. Drydakis' (2022) study on its support in their businesses showed the autonomous technology helps to enhance their flexibility by adopting technology to process an increasing number of demands, speeds up business

operations, and improve effectiveness while helping decrease risks. Digital transformation improves ability to adapt and increases the performance and production capacity of SMEs during the pandemic, says a different study from Priyono et al. (2020).

*Entrepreneurial Orientation*
The key strategies used by companies to inspire entrepreneurs is to improve workplace productivity and provide the business an advantage over its competitors. An entrepreneurial view is one of the main strategies done by businesses to win benefits and advantages, which can help to create a new chance (Anderson et al., 2015). Entrepreneurs' mindset also leads to a creation of new creations and strategies for building up the business's wide range of goods and services (Kamal et al., 2016). Being able to adapt to the changes of demands and competitors' strategies is a sign of this proactive tactic, by Fitriani et al. (2023) and Majali et al. (2022). Businesses that reflect on this, the probability to accomplish their objectives is high and more often search for clear and secret methods to achieve their targets, said Peretz-Andersson et al. (2024). By some research (Shore et al., 2024; Khodor et al., 2024; Upadhyay et al., 2022;), this mentality is important for enhancing their ability to react to new opportunities and advances in technology. Thus, entrepreneurial attitude is essentially. Octavia et al. (2020) said that this approach had a great effect on e-commerce business success, it was found that an excellent rapport between both. The dimensions towards this adoption for SMEs, Nasution et al. (2021) found that innovation in entrepreneurial approach was positively related to the adoption of e-commerce, but it was not significantly related to the risk. This emphasizes the importance of strong relationships and innovation for the success of e-commerce in small and medium-sized enterprises (SMEs).

*Customer-Centric Management Systems*
Customer-centric management systems serve an important role in improving organizational processes and promoting fundamental changes in businesses. Customer-centric management systems not only build organizational structure changes but also enhance and develop processes (Jayachandran et al., 2005). Focusing on the customer as the centre of the business operation can become the solution to help streamline workflows and encourage adaptation in dynamic market settings. In addition, extensive research underscores the significance of customer-centric management systems as essential tools for supporting customer relationship management (CRM) processes. Many studies have examined the idea that organizational software designed to facilitate customer relationship management systems is known as a customer-centric management system (Shao et al., 2023).

The resource-based view (RBV) theory offers useful insights into the implementation of customer-centric management systems.  According to RBV, organizations acquire a competitive edge by making the best use of their resources. These platforms serve as strategic assets, allowing firms to better exploit customer data to improve CRM procedures and drive innovation. According to Jayachandran et al. (2005), customer-centric systems generate value by allowing organizations to better satisfy the demands and expectations of their customers.

The technology acceptance model (TAM) provides insight into why firms choose customer-centric management solutions. This model proposes that the perceived utility and simplicity of use of technology are important variables in its acceptability. Customer-centric technologies prove their usefulness and efficacy by increasing customer satisfaction and

optimizing CRM processes. Bahri-Ammari and Nusair (2015) highlight how these systems simplify operations and make them more customer-focused, which encourages their widespread adoption.

Customer-centric management systems have been extensively studied for their capacity to enhance company processes and create significant organizational transformation. Jayachandran et al. (2005) state that these systems assist firms in adapting to changing client expectations by simplifying processes and aligning strategy with customer wants. These systems help organizations stay competitive by promoting efficiency and agility. Other than that, research has also highlighted the importance of customer-centric management systems as one of the tools for strengthening customer relationships. Bahri-Ammari and Nusair (2015) and Shao et al. (2023) also state that these systems, which are specialized software designed to enhance customer relationship management (CRM) processes. Their findings demonstrate how these systems enable businesses to build stronger connections with customers, improve satisfaction, and maintain long-term loyalty in competitive markets.

## Hypothesis Development
### Dynamic Capability
This allows businesses to react quickly to change by rearranging internal and external abilities. Past studies have shown that improving dynamic capacities through digital transformation boosts performance and competitiveness, particularly in e-commerce and AI adoption (Priyono et al., 2020; Nasution et al., 2021). Drydakis (2022) pointed out the importance of AI in improving dynamic capacities, increasing efficiency, and lowering risks in SMEs.

H1: Dynamic capabilities increase the usage of AI in business among student entrepreneurs in UTHM.

### Entrepreneurial Orientation
Entrepreneurial orientation is very important for developing new methods, recognizing hidden opportunities, and gaining an advantage over their competitors (Anderson et al., 2015; Kamal et al., 2016). Octavia et al. (2020) and Nasution et al. (2021) found that business approach had a positive effect on the adoption of e-commerce and artificial intelligence. The innovative and proactive aspects of entrepreneurial orientation encourage AI adoption, helping businesses to react to new opportunities and challenges (George & Marino, 2011; Zaheer et al., 2019).

H2: Entrepreneurial orientation positively affects the adoption of AI in business among student entrepreneurs in UTHM.

### Customer-Centric Management Systems
Customer-centric management systems are essential to enhance business practices and promote organizational changes. These systems assist businesses in increasing customer satisfaction, adjusting to changes in the marketplace, and developing permanent connections with customers by concentrating on the company strategy around the demands of their customers. According to the research, companies could improve their relationship management, implement the customer data more effectively, and encourage innovation by using customer-centric systems (Jayachandran et al., 2005). By improving efficiency and

responsiveness to client demands, these systems promote long-term customer loyalty (Bahri-Ammari & Nusair, 2015; Shao et al., 2023).

H3: Customer-centric management systems positively impact adoption of new technologies in business among student entrepreneurs in UTHM.
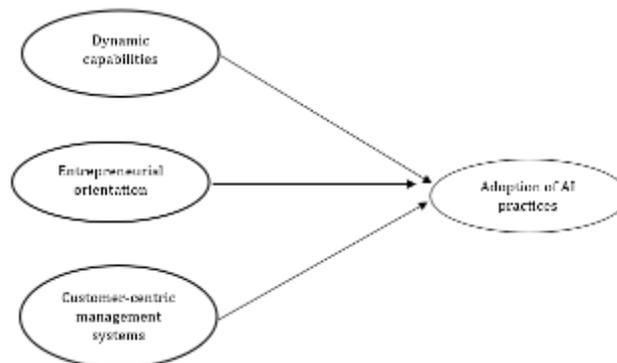
**Conceptual Framework**



Figure 1 Research Framework on AI Adoption among UTHM student entrepreneurs

Based on Figure 1, the conceptual framework for this study focuses on the main factors that influence the use of AI in business. These factors include dynamic capabilities, which are the skills and abilities of student entrepreneurs to adapt to changes and manage resources effectively while entrepreneurial orientation, which refers to their willingness to take risks, be innovative, and proactive; and customer-centric management systems, which are methods and tools that help businesses focus on meeting customer needs. These factors are believed to affect the adoption of AI practices, which means how student entrepreneurs use AI tools and technologies in their businesses to improve efficiency and competitiveness. This framework shows how these factors work together to encourage the use of AI among student entrepreneurs in UTHM.

This literature review focuses on the major variables influencing the adoption of AI in businesses, particularly among student entrepreneurs. Dynamic capabilities are critical for firms to quickly adjust to rapidly changing surroundings and identify emerging opportunities. These competencies, together with digital transformation and AI integration, enable organizations to increase performance and stay competitive. Entrepreneurial orientation, which emphasizes creativity, proactivity, and careful risk-taking, accelerates AI adoption by stimulating new solutions and the investigation of unexplored prospects. Together, these elements enable organizations to stay adaptable and inventive in today's competitive environment. Customer-centric management systems also play a vital role in aligning business strategies with customer needs. These technologies, when used alongside AI, enable businesses to increase customer satisfaction, simplify strategies, and obtain deeper insights into customer behaviors. The study's conceptual framework focuses on the way dynamic capabilities, entrepreneurial orientation, and customer-centric systems interact to increase AI adoption. Implementing and comprehending these factors helps student entrepreneurs to successfully use AI to improve their businesses, resulting in enhanced performance and competitiveness in a constantly shifting business environment.

## Research Methodology

### Research Approach

The research approach for this study is a quantitative methodology to explore the relationship between dynamic capabilities, entrepreneurial orientation, and customer-centric, and how they interact to increase AI adoption. As such, it aligns with Saunders et al. (2019), stating that an exploratory approach helps identify patterns and strategic adaptations that contribute to the subject under study.

### Population and Sampling

The population of this study consists of student entrepreneurs at UTHM. This group is particularly relevant because they represent the next generation of business leaders and have access to emerging technologies, entrepreneurial education, and institutional support. This makes them ideal candidates for examining the adoption of AI . Additionally, UTHM fosters an innovative-driven environment that encourages students to integrate technology into their business ventures, aligning the university's goal of becoming a Global Technopreneur University by 2030. Understanding how these student entrepreneurs adopt AI can provide valuable insights into the challenges and opportunities faced by young business owners, ultimately contributing to the broader discourse on AI-driven entrepreneurship. Based on data from the Pusat Teknousahawan Universiti, there are 407 students registered with this center in 2024. Therefore, based on Krejcie and Morgan (1970) Table, there are 201 samples needed for this study. A survey questionnaire was created in a Google form format and was blasted in the Whatsapp Group of this student entrepreneurs. In return, only 101 have responded to this survey, which brings a 50% response rate for this study

### Validity and Reliability

The instrument was Section A consists of 11 questions, Section B contains 5 questions, Section C has 4 questions, Section D includes 5 questions and Section E comprises 4 questions, totalling 29 questions. In addition, all questions in Section B to E are evaluated using a 5-point Likert scale, which ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).There is general agreement that the minimum coefficient of internal consistency is 0.70. But Cronbach's alpha score is above 0.70 for reliable research.

Table 1
*Validity and Reliability analysis data*

| Reliability Analysis | | |
|---|---|---|
| Variables | Number of items | Cronbach's Alpha |
| **INDEPENDENT VARIABLE** | | |
| Dynamic capabilities | 5 | 0.921 |
| Entrepreneurial orientation | 4 | 0.891 |
| Customer-centric management systems | 4 | 0.923 |
| **DEPENDENT VARIABLE** | | |
| Adoption of AI practices | 5 | 0.893 |

### Data Collection and Analysis

This study primarily relies on primary data obtained through an online survey questionnaire distributed via WhatsApp. A structured self-development survey was used to investigate the relationship between independent and dependent variables, with a total of 101 returned

questionnaires consisting of 29 closed-ended questions. Data collection focused on UTHM student entrepreneurs to examine the role of dynamic capabilities, entrepreneurial orientation, and customer-centric management systems in AI adoption. Descriptive analysis was conducted to summarize data points, including frequencies, means, medians, standard deviations, correlations, scatter plots, graphs, and tables. Additionally, correlation analysis was performed to measure the strength of the linear relationship between variables, assessing changes in one variable due to variations in another. The SPSS correlation and regression guide was also consulted for further analysis.

**Data Analysis and Discussion**
This section emphasizes data analysis, using an analytical approach to assessing online data and presenting the study findings. The results are presented using tables.

*Descriptive Analysis for Demographic*
Table 1 shows descriptive and frequency analysis to summarize survey data and understand respondents' demographics including age, gender, race, faculty, education level, years of study, type of business operated, platform use in e-commerce, size of business, years have been running, and level of familiarity with AI.

Table 1
*Demographic Profile*

| Demographic | Frequency | Percent (%) |
|:---:|:---:|:---:|
| Age: | | |
| 18 - 25 years | 93 | 92.1 |
| 26 - 33 years | 5 | 5.0 |
| 34 - 40 years | 2 | 2.0 |
| 41 years and above | 1 | 1.0 |
| Total | 101 | 100.0 |
| Gender: | | |
| Male | 34 | 33.7 |
| Female | 67 | 66.3 |
| Total | 101 | 100.0 |
| Race: | | |
| Malay | 25 | 24.8 |
| Chinese | 58 | 57.4 |
| Indian | 15 | 14.9 |
| Others | 3 | 3.0 |
| Total | 101 | 100.0 |
| Faculty: | | |
| Faculty of Civil Engineering and Built Environment (FKAAB) | 4 | 4.0 |
| Faculty of Electric and Electronic Engineering (FKEE) | 4 | 4.0 |
| Faculty of Mechanical and Manufacturing Engineering (FKMP) | 1 | 1.0 |
| Faculty of Technical and Vocational Education (FPTV) | 4 | 4.0 |
| Faculty of Technology Management and Business (FPTP) | 78 | 77.2 |

| | | |
|---|---|---|
| Faculty of Applied Science and Technology (FAST) | 2 | 2.0 |
| Faculty of Science Computer and Information Technology (FSKTM) | 5 | 5.0 |
| Faculty of Engineering Technology (FTK) | 3 | 3.0 |
| Total | 101 | 100.0 |
| Education Level: | | |
| Diploma | 5 | 5.0 |
| Bachelor's degree | 92 | 91.1 |
| Master's | 2 | 2.0 |
| PhD | 2 | 2.0 |
| Total | 101 | 100.0 |
| Years of study: | | |
| 1 | 4 | 4.0 |
| 2 | 10 | 9.9 |
| 3 | 75 | 74.3 |
| 4 | 12 | 11.9 |
| Total | 101 | 100.0 |
| Platform used in e-commerce: | | |
| Shopee | 59 | 58.4 |
| Lazada | 17 | 16.8 |
| TikTok | 18 | 17.8 |
| Others | 7 | 6.9 |
| Total | 101 | 100.0 |
| Size of business: | | |
| Micro (Less than 5 employees) | 72 | 71.3 |
| Small (6 - 74 employees) | 25 | 24.8 |
| Medium (75 - 200 employees) | 1 | 1.0 |
| Large (201 and above employees) | 3 | 3.0 |
| Total | 101 | 100.0 |
| Years have been running the business: | | |
| Less than 1 year | 56 | 55.4 |
| 1–3 years | 28 | 27.7 |
| 4–6 years | 11 | 10.9 |
| More than 6 years | 6 | 5.9 |
| Total | 101 | 100.0 |
| Level of familiarity with Artificial Intelligence (AI): | | |
| Very familiar | 41 | 40.6 |
| Somewhat familiar | 54 | 53.5 |
| Not familiar | 6 | 5.9 |
| Total | 101 | 100.0 |

The first question is the respondents' age group. Out of 101 respondents in this study, there are 93 respondents (92.1%) are 18 – 25 years old, 5 respondents (5%) are 26 – 33 years old, 2 respondents (2%) are 34 – 40 years old and the remaining one respondent (1%) is 41 years and above. Secondly, is the respondents' gender group. Out of 101 respondents, 34 respondents (33.7%) are male, and the remaining 67 respondents (66.3%) are female. Thirdly, it is the respondents' race group. Out of 101 respondents in this study, there are 25 respondents (24.8%) are Malay, 58 respondents (57.4%) are Chinese, 15 respondents (14.9%) are Indian and the remaining 3 respondents (3%) are from other races such as Bumiputera Sabah, Melanau and Orang Asli as well. Next, is the respondents' faculty group. Out of 101 respondents in this study, there are 4 respondents (4.1%) who are from FKAAB, 4 respondents (4%) are from FKEE, one respondent (1%) is from FKMP, 4 respondents (4%) from FPTV, 78 respondents (77.2%) from FPTP, 2 respondents (2%) from FAST, 5 respondents (5%) from FSKTM and the remaining 3 respondents (3%) are from FTK.

Then, the respondents' education level. Out of 101 respondents in this study, there are 5 respondents (5%) who are pursuing a Diploma, 92 respondents (91.1%) are taking a Bachelor's degree, 2 respondents (2%) are pursuing Master's and the remaining 2 respondents (2%) are pursuing a PhD. Next, is the respondents' years of study. Out of 101 respondents in this study, 4 respondents (4%) are from year 1, 10 respondents (9.9%) are from year 2, 75 respondents (74.3%) are coming from year 3 and the remaining 12 respondents (11.9%) are from year 4. Apart from that, it is the platform that is used by respondents in e-commerce. Out of 101 respondents in this study, there are 59 respondents (58.4%) who are using Shopee, 17 respondents (16.8%) are using Lazada, another 18 respondents (17.8%) are utilizing Tik Tok, and the other website 7 respondents (3%) are using other website such as Instagram, Facebook, WhatsApp and Xiaohongshu.

Next, is the respondents' size of business. Out of 101 respondents in this study, there are 72 respondents (71.3%) involving in micro business, 25 of them (24.8%) have small types of business, another 1 respondent (1.0%) is having medium size, and the remaining 3 respondents (3%) are having large size of business. Moreover, the years the business has been run by the respondents. Out of 101 respondents in this study, there are 56 respondents (55.4%) running their business less than 1 year, 28 of them (27.7%) are running 1 – 3 years, another 11 respondents (10.9%) have had business 4 – 6 years and the remaining 6 respondents (5.9%) are having their business for more than 6 years. Lastly, it is the respondents' level of familiarity with AI. Out of 101 respondents in this study, there are 41 respondents (40.6%) who are very familiar, another 54 respondents (53.5%) who are quite familiar, and the remaining 6 respondents (5.9%) who are completely not familiar with AI.

*Descriptive Analysis*
Based on Table 2, it shows that the independent variable and dependent variable of the mean and standard deviation. Dynamic capabilities show that the highest mean value for the independent variable with a mean value of 4.1426, while entrepreneurial orientation has the lowest mean value with a mean value of 4.1089, and customer-centric management systems have a moderate mean value that is 4.1129. However, for standard deviation, the independent variable, which is a customer-centric management system, has the highest standard deviation value that is 0.69709, the moderate standard deviation value is entrepreneurial orientation, which is 0.68958, and the lowest standard deviation for the

independent variable is dynamic capabilities, which is 0.69709. Hence, for the dependent variable which is adoption of AI in practices, the mean is 4.1114 and the standard deviation is 0.64757.

Table 2
*Descriptive analysis data*

| Descriptive Analysis | | | |
|---|---|---|---|
| Variables | N | Mean ($\mu$) | Standard Deviation ($\sigma$) |
| **INDEPENDENT VARIABLE** | | | |
| Dynamic capabilities | 101 | 4.1426 | 0.65808 |
| Entrepreneurial orientation | 101 | 4.1089 | 0.68958 |
| Customer-centric management systems | 101 | 4.1129 | 0.69709 |
| **DEPENDENT VARIABLE** | | | |
| Adoption of AI practices | 101 | 4.1114 | 0.64757 |

*Reliability Analysis*
Based on Table 3, it displays various variables alongside their respective question counts and Cronbach's Alpha reliability test scores (α). Specifically, the survey consists of three independent variables: Dynamic capabilities with 5 questions, Entrepreneurial orientation with 4 questions, and Customer-centric management systems with 4 questions. The dependent variable, adoption of AI practices, comprises 5 questions. All the Cronbach's Alpha reliability test scores for the three independent variables and the dependent variables, 0.7, indicate the high level of correlation among these variables.

Table 3
*Reliability analysis data*

| Reliability Analysis | | |
|---|---|---|
| Variables | Number of items | Cronbach's Alpha |
| **INDEPENDENT VARIABLE** | | |
| Dynamic capabilities | 5 | 0.921 |
| Entrepreneurial orientation | 4 | 0.891 |
| Customer-centric management systems | 4 | 0.923 |
| **DEPENDENT VARIABLE** | | |
| Adoption of AI practices | 5 | 0.893 |

*Normality Testing*
A normality test is used to check whether to use a parametric test or not. There are two different tests, the Kolmogorov-Smirnov test and the Shapiro-Wilk test. Based on table 4, the Kolmogorov-Smirnov test is applied in this study due to the sample size of 101 respondents, which is more than 50. The data show that the p-value for all the variables is 0.000, which means that it is lower than 0.05 (p<0.05), it indicates that they are not regularly distributed. Thus, Spearman's rho is being applied for the correlation analysis.

Table 4
*Test of Normality*

| Variables | Normality Testing | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Adoption of AI Practices | 0.164 | 101 | 0.000 | 0.919 | 101 | 0.000 |
| Dynamic Capabilities Contribution | 0.187 | 101 | 0.000 | 0.900 | 101 | 0.000 |
| Entrepreneurial Orientation Affect | 0.170 | 101 | 0.000 | 0.921 | 101 | 0.000 |
| Customer Centric Management System | 0.188 | 101 | 0.000 | 0.909 | 101 | 0.000 |

*Correlation Analysis*
Based on Table 5, dynamic capabilities contribution is 0.809 correlated with adoption of AI practices. It indicates that the relationship between dynamic capabilities contribution and adoption of AI practices is interrelated with a positive value of the correlation coefficient. According to Pearson correlation, it is considered as very high strength of correlation coefficient since 0.809 falls under the range between 0.7 and 1. Hence, there is a strong connection between dynamic capabilities contribution and adoption of AI practices. While entrepreneurial orientation has an effect on 0.835 correlated with adoption of AI practices. It indicates that the relationship between entrepreneurial orientation and adoption of AI practices is interrelated with a positive value of the correlation coefficient. According to Pearson correlation, it is considered to have a very high strength of correlation coefficient since 0.835 falls under the range between 0.7 and 1. Hence, there is a strong connection between entrepreneurial orientation and adoption of AI practices. Lastly, there is a strong connection between customer-centric management systems and the adoption of AI practices. According to Pearson correlation, it is considered to have a very high strength of correlation coefficient since 0.860 falls under the range between 0.7 and 1.

Table 5
*Result of spearman's correlation coefficient*

| Correlation Analysis | | | |
| --- | --- | --- | --- |
| Spearman's rho | | | |
| DEPENDENT VARIABLE: Adoption of AI practices (Correlation Coefficient=1.000) | | | |
| Variables | N | Correlation Coefficient | Significant Value |
| **INDEPENDENT VARIABLE** | | | |
| Dynamic capabilities | 101 | 0.809 | 0.000 |
| Entrepreneurial orientation | 101 | 0.835 | 0.000 |
| Customer-centric management systems | 101 | 0.860 | 0.000 |

*Multiple Regression Analysis*
Based on Table 6, the multiple regression analysis shows the strongest impact on independent variables is customer-centric management systems with 0.467 for a standardized coefficient beta ($\beta$). Entrepreneurial orientation also shows significant influence with a value of 0.343.

However, for dynamic capabilities has the lowest impact with a value of 0.182. These independent variables show that 83.6% of the variation in the dependent variable, which is very high. The adjusted value of 83.0% validates this strength, and the model is statistically significant, it shows that the result is reliable.

Table 6
*Multiple regression analysis data*

| Multiple Regression Analysis | | |
|---|---|---|
| **Dependent Variable** | **Independent Variable** | **Std. Coefficient Beta(β)** |
| | Dynamic capabilities | 0.182 |
| | Entrepreneurial orientation | 0.343 |
| | Customer-centric management systems | 0.467 |
| | $R^2$ | 0.836 |
| | Adjust $R^2$ | 0.830 |
| | Significant | 0.000 |

*Hypothesis Testing*
Based on Table 7, H1, H2, and H3 are accepted. So, we can therefore deduce that the survey's questions are about the adoption of AI practices. As the hypothesis testing results in this study show that the independent variable and dependent variable have a strong and positive relationship in correlation analysis.

Table 7
*Hypothesis Testing*

| Hypothesis Testing | | | | |
|---|---|---|---|---|
| Hypothesis | Standardized Correlation Coefficient | P–Value | Result Interpretation | Accept or reject |
| **H1** | 0.809 | 0.000 | Significant | Accepted |
| **H2** | 0.835 | 0.000 | Significant | Accepted |
| **H3** | 0.860 | 0.000 | Significant | Accepted |

In conclusion, based on the analysis, the study shows that most respondents are young adults aged 18-25 years, the gender is mainly female, and pursuing a bachelor's degree. Many respondents are involved in micro-businesses and by using platforms like Shopee for e-commerce. In normality testing, this study shows that we have a non-normal distribution as our significance is 0.000. Furthermore, the study indicates the correlation analysis that the independent variables like dynamic capabilities, entrepreneurial orientation, and customer-centric management systems have a strongly positive relationship with the dependent variable, which is adoption of AI practice. Then, the multiple regression analysis shows that the independent variable collectively explains 83.6% of the changes in how AI is adopted, showing their importance. This study also supports the acceptance of all hypotheses (H1, H2, and H3).

## Discussion and Conclusions

The respondent information is summarized by gender, age, race, faculty, education level, years of study, type of business, e-commerce platform, business size, and years in operation. The majority are female (66.3%) and aged 18-25 (93%), with the highest race being Chinese (57.4%). Most respondents are from FPTP (77.2%), hold a bachelor's degree (91.1%), and are in year 3 (74.3%). The most common business type is wholesale and services (29.7%), with Shopee as the primary platform (58.4%). Micro-businesses dominate (72%), and most have been operating for less than a year (53.4%).

The ability of a business to sense opportunities, integrate new technologies, and reconfigure existing resources in response to changing environments. Firms with robust dynamic capabilities are more likely to adopt AI successfully because they have the agility and expertise to adapt and implement new technologies in ways that align with the broader business goals. These firms are also better positioned to continuously leverage and refine AI technologies as part of an ongoing process of innovation and adaptation. (Teece et al., 2010).

A business plays a pivotal role in its willingness to adopt AI. Entrepreneurs with a high level of innovation, risk-taking propensity, and proactively are more likely to see AI as an opportunity for growth rather than as a risk. This orientation towards innovation and opportunity-seeking behaviors is essential for fostering a culture that embraces technological advancements, including AI. (Anderson et al., 2015) The findings suggest that businesses that exhibit a strong entrepreneurial orientation are more open to experimenting with AI applications, thereby accelerating the adoption process and enabling them to gain a competitive edge in the market.

As business increases, recognize the importance of customer experiences in achieving long-term success, adopting AI technologies that improve customer satisfaction and engagement become a key strategic focus. AI can enable businesses to deliver personalized services, enhance customer interactions, and predict customer needs more effectively. (Jayachandran et al., 2005). The research finds that firms with a strong customer-centric approach are more likely to adopt AI as they seek to enhance their value proposition and provide better services to their clients. (Bahri-Ammari & Nusair, 2015; Shao et al., 2023). This orientation not only improves the customer.

The adoption of Artificial Intelligence (AI) in business is increasingly recognized as a critical factor for competitive advantage in the modern business landscape (Qi et al., 2023). However, many entrepreneurs and businesses face significant challenges in understanding and addressing the multifaceted factors that influence the adoption of AI. This research explores the role of dynamic capabilities, entrepreneurial orientation, and customer-centric management systems in facilitating AI adoption. By investigating these factors and their interactions, the study contributes to a deeper understanding of how businesses can successfully implement AI to enhance performance, customer satisfaction, and overall business strategy.

## Implications of Theoretical and Practical

The study found that UTHM student entrepreneurs in adopting AI in their business were influenced by the factors of entrepreneurial orientation, dynamic capabilities, and customer-

centric management systems. In this study, the theory of entrepreneurial orientation was utilized to describe the whole research framework on the factors towards entrepreneurial orientation among UTHM students. As this study may be used as a reference, it can provide additional insights for future research on related themes. This study can also serve as guidance for any similar research, particularly for research on the adoption of AI in business among student entrepreneurs in UTHM.

Based on the findings, this study may benefit educational institutions because it can guide UTHM and other educational institutions in Malaysia on designing or enhancing entrepreneurial programs to foster the adoption of AI in business student entrepreneurs in UTHM. By implementing structured entrepreneurial programs that incorporate AI-driven business strategies, universities can equip students with the necessary skills to navigate and succeed in the modern business landscape. Besides that, this study could directly benefit UTHM students by providing insight into the advantages of doing business by using the adoption of AI in shaping careers in business in the future. With AI becoming an essential tool in business operations, students who adopt AI-based solutions may gain a competitive edge in the industry, making them more adaptable to market changes and consumer demands. In addition, authorities in the Malaysian government could assess the impact of the e-commerce business policies and possibly refine or develop new strategies to encourage student entrepreneurship among students, contributing to economic development. By leveraging the insights from this study, policymakers can craft targeted initiatives that support young entrepreneurs, such as AI-based business funding, digital transformation training, and policy frameworks that facilitate AI adoption. These efforts could contribute significantly to economic development by fostering an innovative and technologically-driven entrepreneurial ecosystem.

**Limitation**
The study faces several limitations that warrant consideration. Firstly, a constrained temporal 4 months restricted to do the mini research, limiting observation solely to UTHM students and hindering the extrapolation of findings to encompass all university students. This short duration may have also limited the depth of data collection and analysis. Additionally, the sample size of only 101 respondents, while fully collected, remains relatively small, potentially affecting the representativeness of the findings. Moreover, with a sample size of only 101 out of 101 questionnaires returned, coupled with overrepresentation of Chinese students at UTHM, poses challenges in accurately representing the broader demographic of student entrepreneurs among university students. Issues with that in online survey data collection, such as potential response bias or limited engagement, that may have affected the reliability of data. The reliance on self-reported responses may also introduce subjectivity, which could influence the accuracy of the findings.

**Directions for Future Research**
In the future, this research can focus on expanding the study to include student entrepreneurs from other universities to gather more diverse data. This would enhance the generalizability of the findings and provide a more comprehensive understanding of AI adoption among student entrepreneurs. It could also be used in interviews or group discussions to better understand students' thoughts and feelings about using AI in their business, and their awareness of AI, which could influence its adoption. Future research could also explore the

impact of AI awareness programs on adoption rates among student entrepreneurs. Furthermore, it could aim for a sample size of over 100 targeted questionnaires, which would make the data more reliable and accurate. Finally, future studies could track these factors over time to observe how they change as AI technology advances and as students develop their businesses. This approach would yield valuable insights into long-term trends and the sustainability of AI adoption in entrepreneurial ventures.

**Conflict of Interest**
The authors declare that there are no conflicts of interest regarding the publication of the paper.

**Author Contribution**
All authors contributed equally to the study, including its conception and design, data collection, analysis, and interpretation, as well as manuscript writing and revision. All authors have read and approved the final version of the manuscript.
*(reference https://www.elsevier.com/authors/policies-and-guidelines/credit-author-statement)*

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