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Harnessing Digital Platforms for Entrepreneurial Success: A Study of Technopreneurship Trends and Practices

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Abstract

The digital era has opened opportunities for entrepreneurs (technopreneurs) to enhance their performance and market reach. However, a deep understanding of how the use of digital platforms, digital customer engagement, and operational efficiency through digitalization contribute to entrepreneurial success is still limited. This study aims to analyze the impact of digital platform usage, digital customer engagement, and operational efficiency through digitalization in the context of entrepreneurial success. The primary goal is to identify and measure the extent to which these three variables contribute to entrepreneurial success in the digital era. This research employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) method using SmartPLS software. This approach was chosen due to its capability in handling complex models and exploratory data. Data was collected from an online survey completed by entrepreneurs actively using digital platforms in their businesses. The sample consists of 300 respondents representing various industry sectors and business sizes. The study's findings indicate that the use of digital platforms significantly enhances customer engagement and operational efficiency. Digital customer engagement plays a vital role in building loyalty and trust, which further influences business success. Operational efficiency through digitalization also contributes significantly to increasing productivity and reducing operational costs. Overall, this research provides empirical evidence that effective integration of digital technologies is key to entrepreneurial success in the digital era.

Keywords: *Digital Platform Usage, Digital Customer Engagement, Operational Efficiency in Digitalization, Technopreneurship Trends*

1. Introduction

In the last decade, the digital revolution has brought about fundamental changes in the business world, especially for entrepreneurs or technopreneurs. The era of digitalization has opened significant new opportunities but also presented unique challenges. The use of digital platforms, such as social media, e-commerce, and various other technological tools, has become key to enhancing visibility, market access, and business operations [1]. However, rapid changes in digital technology also raise questions about how entrepreneurs can effectively utilize these platforms to optimize their business potential, A visual image can be seen in Figure 1. [2].

Figure 1. E-commerce

At the same time, competition in the digital business world is becoming increasingly intense. Entrepreneurs are faced with the challenge of not only adopting the latest technology but also continuously innovating and adapting to market changes. Digital customer engagement, now at the center of marketing strategies, requires a more interactive and personalized approach [3]. Moreover, the challenge of managing operational efficiency with the help of digitalization, including automation and system integration, is a significant topic in current business discussions [4].

In this context, the question arises of how entrepreneurs can utilize digital technology not just as a tool, but as a core strategy for achieving success and sustainable business growth [5]. Despite the increased awareness of the importance of digital technology in entrepreneurship, there still exists a gap in understanding the most effective ways to integrate this technology into various business aspects [6]. First, there's the challenge of identifying which digital platforms are most effective for a specific type of business. Not all platforms are suitable for every business model, and the wrong selection can lead to inefficient investment of time and resources [7].

Second, there's the issue of measuring the impact of digital customer engagement on business success [8]. Many entrepreneurs use social media and other digital platforms to interact with customers but often struggle to measure the Return on Investment (ROI) of these activities. Without a clear understanding of how this engagement contributes to customer loyalty and increased sales, it's challenging to optimize digital marketing strategies [9].

Third, regarding operational efficiency, even though many digital solutions promise increased efficiency, many entrepreneurs face difficulties in system integration and business process automation. A lack of technical understanding and resources often becomes an obstacle in the effective implementation of these technologies [10].

In response to these challenges, various solutions have been developed and implemented [11]. These include a variety of CRM platforms designed to manage customer interactions, analytical tools to measure digital marketing performance, and resource management systems that automate business processes [12]. The use of social media for

marketing and brand awareness has also become a common practice, leveraging the power of digital networks and communication to reach a wider audience [13].

The advantages of these solutions lie in their ability to provide entrepreneurs with the necessary tools to manage and grow their businesses in a dynamic digital environment. CRM systems, for example, allow companies to store detailed customer information, facilitating personalized service and communication. Analytical tools provide valuable insights into customer behavior and marketing strategy effectiveness, assisting in data-driven decision-making [14]. Business process automation reduces the manual workload, increases efficiency, and allows a focus on business strategy and innovation [15].

However, these solutions also have disadvantages. The implementation of CRM systems and analytical tools often requires a significant initial investment, both in terms of financial resources and time for training and adaptation [16]. Moreover, there's the risk of over-reliance on data and analytics, which can lead to the neglect of other important business aspects such as creativity and human intuition. Lastly, although automation offers efficiency, it can also lead to challenges in integrating various systems and processes, and requires regular maintenance and updates to remain relevant and effective [17].

Considering the advantages and disadvantages of the existing solutions, this study proposes a more holistic and integrated approach in utilizing digital platforms for entrepreneurial success. The main focus is on developing strategies that not only adopt the latest technology but also ensure that this technology is well integrated into all aspects of the business, from marketing and sales to operations and customer service [18].

One key aspect of the proposed solution is the use of the Partial Least Squares Structural Equation Modeling (PLS-SEM) model to analyze data and draw reliable conclusions about the relationship between the use of digital platforms, digital customer engagement, and operational efficiency [19]. PLS-SEM allows for complex modeling that encompasses many variables and interrelated relationships, providing deeper insights into the dynamics affecting entrepreneurial success in a digital context [20].

Additionally, this research emphasizes the importance of continuous learning and adaptation in the use of technology. This involves not only the adoption of the latest tools and platforms but also ongoing evaluation of their effectiveness and readiness to make adjustments when necessary. This approach recognizes that in a rapidly changing business environment, flexibility and the ability to adapt are as important as the implementation of technology itself [21].

In summary, this study acknowledges the importance of digitalization in entrepreneurship and captures the complex nuances of its impact on business success. By identifying shortcomings in existing solutions and proposing a new, more integrated, and holistic approach, this research aims to provide insights and strategies useful for entrepreneurs striving to fully harness the potential of digital technology [22].

The approach proposed in this study not only focuses on the application of technology but also on a deeper understanding of how technology can be effectively integrated into various business aspects. This includes understanding how the use of digital platforms can enhance customer engagement and operational efficiency, and how this ultimately affects business success [23].

Thus, this study not only contributes to academic literature but also offers practical guidance for entrepreneurs and business practitioners. In an era where constant adaptation and innovation are necessary, the findings and recommendations from this research are expected to assist entrepreneurs in making strategic decisions that will lead them to a path of success and sustainable growth [24].

The research also strives to bridge the gap between theory and practice. By utilizing a robust methodology such as PLS-SEM, the study not only produces reliable findings but also allows for the application of these research outcomes in real business practices. This approach emphasizes the need for a deep understanding of the dynamics affecting entrepreneurship in the digital era, and how entrepreneurs can leverage technology to their advantage [25].

In conclusion, this introduction sets the stage for a comprehensive study on how entrepreneurs can harness digital platforms to achieve success. Focusing on three main variables: the use of digital platforms, digital customer engagement, and operational efficiency through digitalization, this research aims to fill gaps in the literature and provide new insights that can assist entrepreneurs in facing challenges and capitalizing on opportunities in the digital era [26].

2. Research Method

This research method is designed to test hypotheses related to the use of digital platforms, digital customer engagement, and operational efficiency in the context of entrepreneurship [27]. Here are the details of the research methodology that will be used:

a. Research Design

The study will employ a quantitative approach to test the relationships between the specified variables. Partial Least Squares Structural Equation Modeling (PLS-SEM) will be used for data analysis, allowing for handling complex models and latent variables. This software will be used to implement the PLS-SEM model and conduct the necessary statistical analysis [28].

b. Data Collection

The sample will consist of entrepreneurs who actively use digital platforms in their business operations. Data collection will be conducted through an online survey, with a questionnaire designed to measure key aspects of each variable. The use of a Likert scale will assist in effectively measuring survey participants' responses [29].

c. Variable Measurement

There are two key points in variable measurement: Digital Platform Usage and Digital Customer Engagement. Digital Platform Usage will be measured based on the intensity and type of platforms used in the business. Digital Customer Engagement will be measured through indicators such as the frequency of interaction and the use of platforms for customer service [30].

d. Data Analysis

The validity and reliability of each construct will be tested using SmartPLS, ensuring the reliability of the measurements. The relationships between variables will be evaluated to determine the significant influence between independent and dependent variables [31].

This method allows the research to accurately evaluate complex and multifaceted relationships in digital entrepreneurship, providing valuable guidance for business practices and directions for future research.

2.1 Literature Review

2.1.1 Digital Platform Usage in Entrepreneurship

Recent studies indicate a positive correlation between the adoption of digital platforms by entrepreneurs and their business success [32]. The use of technologies like social media, e-commerce, and cloud computing has been proven to enhance visibility, broaden market reach, and strengthen customer relationships. Several studies highlight how digital platforms transform traditional business models. Digital technologies enable more agile, adaptive, and customer-oriented business models, crucial in a competitive and rapidly changing business environment.

2.1.2 Digital Customer Engagement

Latest research has explored how social media facilitates deeper customer engagement. These platforms are not just marketing tools but also means to build communities, enhance brand loyalty, and gather valuable feedback. Studies show that personalization in digital marketing plays a crucial role in attracting and retaining customers [33]. Customizing content and offers based on customer data can significantly enhance the effectiveness of customer engagement.

2.1.3 Operational Efficiency through Digitalization

Research focusing on operational digitalization has found that automating business processes can reduce operational costs and enhance efficiency. The use of tools like AI and machine learning in business operations has shown potential in improving productivity and accuracy. Other research emphasizes the importance of system integration in enhancing operational efficiency. Integration among various digital platforms facilitates information flow, accelerates decision-making processes, and improves responsiveness to market changes [34].

2.1.4 Challenges and Risks

Although the benefits of digital technology are clear, studies also show that many entrepreneurs struggle with adapting and implementing this technology. These challenges are often related to resource and expertise limitations. Data security is a major concern in the digital era. Research highlights risks associated with storing and managing customer data, underscoring the importance of implementing strong security practices [35].

2.1.5 The Role of Technopreneurship

Studies indicate that entrepreneurs leveraging digital technology tend to be more innovative and have higher growth potential. Technopreneurship is considered a crucial catalyst in driving innovation and adaptation in business. Economic research highlights the significant role of technopreneurship in the macro economy, including job creation, innovation, and contributions to GDP [36].

2.1.6 Future Trends and Practices

Research on future trends indicates that the evolution of technologies like artificial intelligence, internet of things (IoT), and big data will significantly impact entrepreneurial practices. These technologies are expected to open new opportunities in service personalization, product development, and operational efficiency. There is an increasing focus on sustainability and social entrepreneurship in recent studies. The utilization of digital technology in addressing social and environmental challenges is becoming an increasingly relevant topic, highlighting the role of technopreneurs in driving positive change and sustainable development [37].

2.1.7 Integration of Digital Technologies

Some studies emphasize the importance of synergy among platforms in maximizing the benefits of digital technology. Integration between e-commerce platforms, social media, and data management systems, for instance, can yield more comprehensive insights and higher operational effectiveness. Data analysis receives special attention in the latest literature as a crucial tool in business decision-making. The ability to analyze customer data in real-time and use it to guide business strategy is a key factor in the success of digital entrepreneurship [38].

2.1.8 Impact of Digital Platforms on Market Dynamics

Market Access and Expansion: Research shows that digital platforms have played a key role in opening new market access and enabling business expansion. The ease and low cost of reaching global markets are significant factors for entrepreneurs of any business scale.
Competitive Advantage and Disruption: Literature also explores how digital platforms can be a source of competitive advantage and how they can cause disruption in certain industries. Entrepreneurs who can effectively leverage these technologies often outperform competitors who are slower to adopt digital innovations.

2.1.9 Concluding Thoughts

Although digital technology offers many advantages, literature emphasizes the importance of balancing technology and human insight. Human involvement remains crucial in data interpretation, creative innovation, and strategic decision-making. Future research is suggested to further explore the long-term impact of digitalization in entrepreneurship, particularly in the context of sustainability, business ethics, and social change [39].

Through this literature review, it becomes clear that a deep understanding of current trends and practices in the use of digital platforms, digital customer engagement, and operational efficiency is key to navigating an ever-changing and increasingly digitized business landscape. These studies provide important guidance for entrepreneurs seeking to leverage digital technology to achieve success and sustainable growth [40].

2.2 Hypothesis Formulation

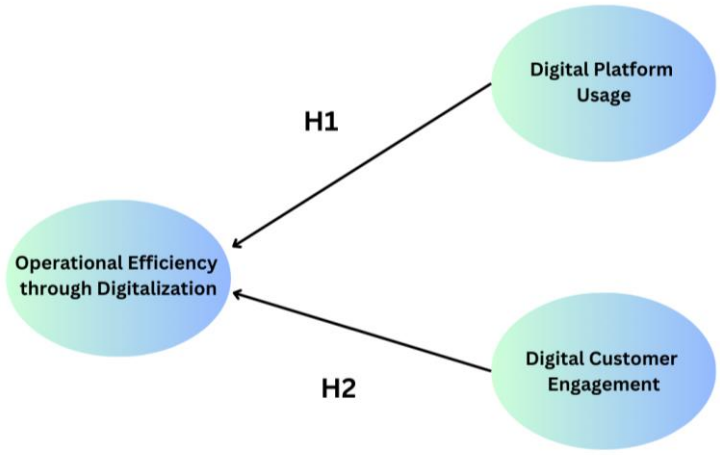

Figure 1. Research Framework

H1: Digital Platform Usage berhubungan positif dan significant dengan Operational Efficiency through Digitalization
H2: Digital Customer Engagement berhubungan positif dan significant dengan Operational Efficiency through Digitalization

3. Finding

3.1 Validity Test

In this Validity Test, the smartpls 4.0 method was used with 300 respondents. Evaluation is carried out using convergent validity, discriminant validity, and average variance extracted (AVE) with a limit value of 0.50.

a. Convergent Validity

The convergent validity of the measurement model can be observed by using the correlation between item scores or construct indicators. To be considered valid, individual indicators must have a correlation greater than 0.70, which is the expected value. According to Chin, quoted by Imam Ghazali, an outer loading value between 0.5-0.6 is sufficient to meet the requirements for convergent validity [41].

The validity of reflective indicators is tested by looking at the correlation between item scores and construct scores. The use of reflective indicators in measurement shows that changes in a construct occur when other indicators in a different construct undergo changes or are removed from the model. Therefore, it can

be concluded that all constructs, namely Retention, Transformational Leadership, Corporate Social Responsibility, Autonomy, Work Life Balance, Technology, Intrinsic Motivation have valid data with values above 0.50 [42].

b. Discriminant Validity (Validity Test Using AVE)

To measure discriminant validity, a comparison is made between the root mean square of variance extracted (AVE) of each construct and the correlation between that construct and other constructs in the model. If the square root value of the AVE of each construct is greater than the correlation value between the construct and other constructs in the model, it can be concluded that the discriminant validity is good. Based on the discriminant validity data presented above, the values on the diagonal of the table are the square root of the Average Variance Extracted (AVE), while the values below the diagonal indicate the correlation between the constructs [43]. In this table, the squared AVE value is higher than the correlation value, which indicates that discriminant validity has been met. One other method to measure discriminant validity is to look at the square root value of the Average Variance Extracted (AVE), with a recommended value above 0.50. Below are the reliability values tested based on the AVE values in the following table:

Tabel 1. Average Variance Extracted (AVE)

Variabel	Average Variance Extracted (AVE)	Information
DPU	0.718	Valid
DCE	0.685	Valid
OETD	0.581	Valid

Based on Table 1, all constructs show AVE values above 0.50. Digital Platform Usage has an AVE value of 0.718, Digital Customer Engagement has an AVE value of 0.685, Operational Efficiency through Digitalization has an AVE value of 0.581 [44].

c. Reliability Test

In this reliability test, the smartpls method was used involving 300 respondents [45]. Evaluation is carried out using composite reliability, with a minimum limit value of 0.70.

3.2 Cronbach Alpha

Reliability testing is a method used to measure the stability or consistency of a questionnaire that functions as an indicator of variables. A measurement instrument, such as a questionnaire, is considered to have consistent or stable results if the instrument is reliable or has high reliability [46]. Therefore, it is important to conduct reliability testing in this research. Reliability testing is carried out through the internal consistency method, using Cronbach's alpha as a measure of reliability. In this research, the reliability of a construct is considered good if the Cronbach's alpha value exceeds 0.70.

Tabel 2. Cronbach Alpha

Variabel	Cronbach Alpha	Information
DPU	0.901	Valid
DCE	0.883	Valid
OETD	0.802	Valid

Based on Table 2, all constructs show Cronbach's alpha values above 0.70. Digital Platform Usage has a value of 0.901, Digital Customer Engagement has a value of 0.883, and Operational Efficiency through Digitalization has a value of 0.902.

3.3 R Square Test

The R square value is a measure used to observe the extent of differences between independent variables and dependent variables. An R square value of 0.19 indicates a low influence, while a value of 0.33 indicates a moderate influence, and a value of 0.66 indicates a high influence. The results of the R square values in this research are based on 300 respondents.

Tabel 3. R-Square Test

Variabel	R-Square
Operational Efficiency through Digitalization	0.712

Based on the calculation results and the table above, it can be concluded that there is one variable in this research that has a high influence on Digital Platforms for Entrepreneurial Success. This variable is Operational Efficiency through Digitalization, which has an R square value of 0.712 or equivalent to 71.2%.

3.4 F Square Test

The F Square test is used to measure the extent to which endogenous variables affect exogenous variables. In addition to evaluating the existence of significant relationships between variables, it is important for a researcher to assess the extent of influence among variables using Effect Size or f-square. An f square value of 0.02 is considered small, 0.15 is considered medium, and a value of 0.35 is considered large. Values below 0.02 can be ignored or considered to have no significant effect. The following are the results of the primary data processing in the F square test.

Tabel 4. F Square Test

	Digital Customer Engagement	Digital Platform Usage	Operational Efficiency through Digitalization
Digital Customer Engagement	-	-	0.170
Digital Platform Usage	-	-	0.285

From the above results, it can be concluded that:

The Digital Customer Engagement variable has a moderate impact on the Operational Efficiency through Digitalization variable with an f square value of 0.170. The Digital Platform Usage variable has a moderate impact on the Operational Efficiency through Digitalization variable with an f square value of 0.285.

3.5 Path Coefficient Test

The path coefficient test is used to measure the extent of the influence that exists between variables. The path coefficient or path coefficient value will indicate the significance level of the relationship between constructs in the structural model or in hypothesis testing. This testing is conducted using SmartPLS software version 4.0.8.9. The testing is conducted using a one-tailed approach, where the hypothesis is considered significant if the variables in the study have a T statistic value above the significance level of 1.96 or ≥ 1.96 and a P value ≤ 0.05.

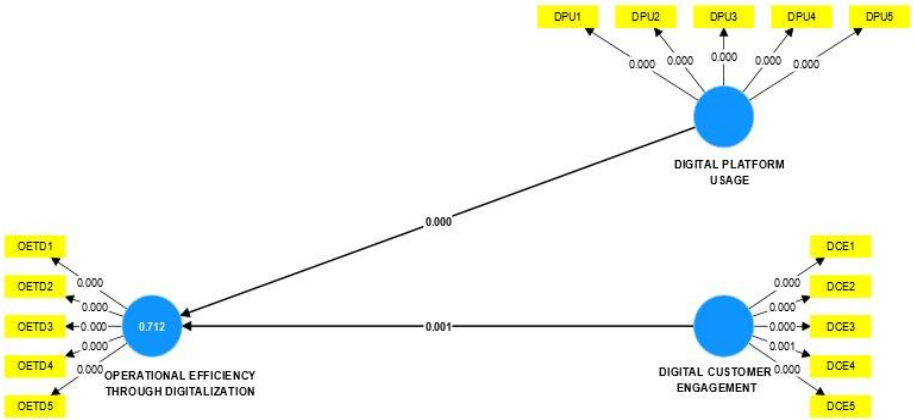

Figure 2. Path Coefficient Test

From the results of the path coefficient test, the following hypotheses can be explained:

Table 4. Path Coefficient Test

	Original Sample (o)	T statistics	P values
DCE -> OETD	0.385	3.306	0.001
DPU -> OETD	0.499	3.885	0.000

a. The original sample value from Digital Customer Engagement to Operational Efficiency through Digitalization is 0.385, which means that the Digital Customer Engagement variable has a positive influence on Operational Efficiency through Digitalization. Additionally, it is observed that the T statistic value is above 1.96 with a value of 3.306 and the P value is 0.001 or below 0.05, indicating that the Digital Customer Engagement variable has a significant positive influence on Operational Efficiency through Digitalization.
b. The original sample value from Digital Platform Usage to Operational Efficiency through Digitalization is 0.499, which means that the Digital Platform Usage variable has a positive influence on Operational Efficiency through Digitalization. Furthermore, it is observed that the T statistic value is above 1.96 with a value of 3.885 and the P value

is 0.000 or below 0.05, indicating that the Digital Platform Usage variable has a significant positive influence on Operational Efficiency through Digitalization.

3.6 Hypothesis Testing Results

The hypotheses relate to the relationship between the use of digital platforms, digital customer engagement, and operational efficiency through digitalization in a business context. Here is an explanation for each hypothesis:

3.6.1 H1: Digital Platform Usage is positively and significantly related to Operational Efficiency through Digitalization

This hypothesis states that the more intensive the use of digital platforms by a business, the greater the increase in operational efficiency achieved through digitalization. This means that the use of digital tools such as social media, e-commerce platforms, and others is expected to significantly contribute to increased efficiency in business operations. The logical explanation behind this is that digital platforms can automate many business processes, reduce the time and effort required for certain activities, and provide tools for more efficient data analysis and management. In other words, this hypothesis assumes that digitalization of business operations through the use of digital platforms enables companies to work smarter, not harder, thus enhancing productivity and efficiency.

3.6.2 H2: Digital Customer Engagement is positively and significantly related to Operational Efficiency through Digitalization

This hypothesis states that a higher level of digital customer engagement, achieved through digital platforms, has a significant positive relationship with increased operational efficiency of the business. This means that effective and ongoing interaction with customers through digital platforms is not only beneficial for building better customer relationships but also contributes to operational efficiency. This could be because good customer engagement often leads to more effective feedback, optimization of products or services based on customer preferences, and reduced marketing and customer service costs. This hypothesis suggests that companies that successfully integrate customer engagement into their digital strategies can achieve increased operational efficiency, possibly through increased sales, reduced customer service costs, or increased customer satisfaction that reduces marketing and retention costs. In both hypotheses, the primary assumption is that the integration and effective application of digital technology in business contribute not only to specific aspects such as innovation or customer engagement but also have a broad and significant impact on overall operational efficiency.

5. Conclusion

The advent of the digital era has markedly transformed the landscape of entrepreneurship. This study, focusing on technopreneurship trends and practices, delves into the pivotal role of digital platforms in enhancing entrepreneurial performance and market reach. Through the analysis of data collected from 300 entrepreneurs across various industries and business sizes, the study provides insightful revelations on the dynamics of digitalization in entrepreneurship. The core of this research involved examining the relationship between digital platform usage, digital customer engagement, and operational efficiency through digitalization. Employing the Partial Least Squares Structural Equation Modeling (PLS-SEM) method via SmartPLS software, the study adeptly navigated the complexities inherent in these multifaceted variables.

The findings of the research underscore the significant impact of digital platform usage on operational efficiency in the entrepreneurial realm. Hypothesis 1, asserting the positive and significant relationship between digital platform usage and operational efficiency through digitalization, was strongly supported. This illustrates how adept use of digital platforms can streamline business operations, thereby enhancing overall efficiency. Furthermore, the study revealed a profound connection between digital customer engagement and operational efficiency, as posited in Hypothesis 2. This relationship highlights the importance of digital

engagement in cultivating customer loyalty and trust, which are crucial elements that bolster business success. The integration of customer engagement strategies with digital platforms not only strengthens customer relationships but also contributes to the operational efficiency of businesses.

In conclusion, this research illuminates the critical role of digital technologies in the success of modern entrepreneurs. It demonstrates that effective integration of digital platforms and customer engagement strategies significantly contributes to improving operational efficiency and reducing operational costs. These insights are invaluable for entrepreneurs who seek to thrive in the rapidly evolving digital landscape, offering a roadmap for leveraging digital technologies to achieve entrepreneurial success.

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