Jurnal Organisasi dan Manajemen
Journal Homepage : http://jurnal.ut.ac.id/index.php/JOM

# Analysis of B2B Commerce Platform Adoption Model Using Technology Organization Environment Framework on Medbiz

Abdul Ghany Lukman Nugraha*, Siska Noviaristanti
Department of Management, School of Economics and Business, Telkom University, Indonesia
*Corresponding author e-mail: abdulghany@student.telkomuniversity.ac.id

**Article Info**

***Keywords:***
B2B commerce;
Pharmaceutical;
Supply chain;
TOE framework;
Technology adoption

***JEL Classification:***
D47, L11, M31

***DOI:***
10.33830/jom.v21i1.11128.2025

***Article History***
Received: December 27, 2024
Accepted: April 22, 2025
Publish: April 26, 2025

**Abstract**

**Purpose** –This study investigates the factors influencing customers' decisions to adopt the Medbiz Pharmaceutical B2B Commerce platform as an enabler in the pharma integrated supply chain. It uses technology, organization, environment (TOE) as its framework. The factors examined include relative advantage, compatibility, complexity, IT readiness, top management support, competitive pressure, business partner pressure, and external support. The findings are expected to provide insights for Medbiz stakeholders to develop strategies that enhance user acceptance and adoption of the platform.

**Methodology** – A quantitative approach was employed to identify the critical drivers of Medbiz adoption. A cross-sectional survey of 372 respondents, consisting of pharmaceutical outlet representatives, was conducted using random sampling. Data was collected through a structured questionnaire based on a 4-point Likert scale.

**Findings** – The result shows that relative advantage, compatibility, competitive pressure and external support have a positive, significant impact on Medbiz adoption, while complexity has a negative, significant effect. Conversely, IT readiness, top management support, and business partner pressure show negative, insignificant effects, leading to hypothesis rejection.

**Originality** – Studies related to the pharma B2B commerce adoption model in organizations are very limited, especially in Indonesia.

## 1. Introduction

Following the COVID-19 pandemic, pharmaceutical companies strive to maintain strong performance amid rapid industry growth. Beyond financial gains, they are placing greater emphasis on social responsibility and environmental sustainability. Leading firms strengthen supply chain management to ensure long-term competitiveness and sustainable operations. As healthcare demand rises, efficient supply chain management will be vital for market growth and corporate innovation (Ma et al., 2023). Traditionally, manual processes in stock management, ordering, and transaction handling have led to errors and inefficiencies(Fagasta et al., 2017). Business-to-Business (B2B) commerce aims to address persistent operational challenges such as supply chain uncertainties, delays in transaction processes, and limited supply chain visibility (Chatra, 2023).

As a result of these supply chain challenges, B2B commerce has experienced significant growth in recent years, with the COVID-19 pandemic further accelerating this trend (Freddy, 2022). Surveys by Gavin et al. (2020) revealed that over 90% of B2B transactions shifted to online platforms during the pandemic as businesses sought to maintain operations through digital channels. Furthermore, Gartner projects that 75% of B2B procurement will be conducted online, with B2B commerce contributing to 40% of the global online retail market within the next five years, with Asia leading this growth. To address these challenges and capitalize on emerging opportunities, Bio Farma, an Indonesian state-owned pharmaceutical company, introduced Medbiz (Medicine Distribution Business Zone), a B2B commerce platform B2B commerce platform designed to streamline the procurement of pharmaceutical products and medical devices (IGM, 2023).

Medbiz simplify the procurement process for pharmaceuticals, medical devices, and other needs through a single online platform that connects business owners with official pharmaceutical distributors in Indonesia. With the adoption of the Medbiz B2B Commerce platform, the pharmaceutical business paradigm has undergone a significant transformation. The B2B procurement process through Medbiz enables seamless integration between distributors and customers (retail pharmacies). Automation of ordering and inventory management minimizes human error, while real-time access to product information enhances supply chain visibility. Additionally, price transparency, convenient payment options, and efficient order tracking are key features that offer a significant competitive advantage (Sutrisman & Pangaribuan, 2022). Bio Farma claims that this solution can save up to 20% of the time typically spent on sales transactions (Andi, 2023).

Despite its potential benefits, only 30% of registered customers (retail pharmacies) have successfully completed transactions, with fewer than 20% doing so independently. As a result, it has achieved only 6% of Medbiz's management transaction target for 2024. This situation is a concern for Medbiz’s management, who need to identify the underlying causes in order to increase the number of active customers and subsequently boost transaction volumes on the platform. The ineffective and incomplete adoption of new innovations and technologies can stem from various factors, including resistance to change, lack of understanding of benefits, and technical constraints (Ito & Ylipaa, 2021). A Medbiz management representative noted that success in implementing Medbiz involves not only technological factors but also internal organizational readiness and external environmental influences. This perspective aligns with Li (2020), which emphasizes that technology adoption decisions are influenced by factors beyond employee acceptance, such as business strategy, operational goals, supplier relationships, and competitive environment. To fully understand the challenges of implementing Medbiz technology, it is essential to explore the factors affecting customer decisions to adopt the platform. Gaining insights into these factors will help Medbiz improve the sustainability and effectiveness of its B2B Commerce platform, addressing more than just technological issues.

Several theories can be used to investigate the determinants of technology adoption. Unlike other theories such as TRA, TPB, TAM, and UTAUT, which focus on individual perspectives, the Technology-Organization-Environment (TOE) Framework developed by Tornatzky et al. (1990) emphasizes the contextual factors influencing the adoption of innovations within organizations. The TOE model examines the impact of technological, organizational, and environmental factors on customer decision-making (Zhu & Kraemer, 2005). It is one of the most widely used theories for studying technology adoption. Its validity is based on a holistic approach to innovation adoption, offering flexibility by leveraging key technological, organizational, and environmental influences (Nguyen et al., 2022).

In technological context, numerous studies have examined the relationship between technological factors and B2B commerce adoption, focusing on three main factors: relative advantage, compatibility, and complexity (Alsaad et al., 2017; Ayawei et al., 2023; Hamad et al., 2018; Ocloo et al., 2020; Upadhyaya et al., 2017). Relative advantage indicates how much better an innovation is perceived compared to existing methods, compatibility assesses its alignment with current needs and values, and complexity reflects the perceived difficulty of understanding and implementing the innovation. Understanding these factors is crucial for grasping company behavior in adopting B2B commerce and achieving success in digital transformation.

The organizational context, according to Chwelos et al. (2001) and Iacovou et al. (1995), assesses an organization's ability to adopt different types of innovations. Two key factors that characterize this context, as identified in empirical studies, are IT readiness and support from top management (Alsaad et al., 2017; Ocloo et al., 2020; Van Huy et al., 2012). In environment context, companies often encounter external pressures to adopt B2B commerce from various stakeholders, including suppliers, customers, competitors, and consultants. These pressures can manifest as force, threats, persuasion, or invitations (Sila, 2013). Research by Iacovou et al. (1995) indicates that such pressures from the business environment, including demands from partners and industry competition, can either facilitate or hinder technology adoption within organizations. Furthermore, changes in industry regulations are recognized as an environmental factor that can impact technology adoption strategies.

### 1.1. Relative Advantage and Medbiz Adoption Decision

Relative advantage, as defined by Rogers (1995), indicates how quickly an innovation is perceived as superior to the idea it replaces, based on aspects such as economic benefits, social prestige, convenience, or satisfaction. A higher perceived relative advantage leads to faster adoption rates, highlighting its critical role in influencing the acceptance of innovative technologies (Iacovou et al., 1995). Empirical studies confirm that relative advantage significantly impacts technology adoption decisions, especially in B2B commerce (Ghobakhloo et al., 2011; Hamad et al., 2018; Rahayu & Day, 2015). Research by Noviaristanti & Huda (2022) identified relative advantage as the key factor in the adoption of the Etapasbar e-marketplace by SMEs in Bandung, while Martadikusumah & Indirawati (2023) emphasized its importance in influencing business decisions regarding digital platforms.

**$H_1$:** Perceived Relative Advantage positively influences the adoption decision of the Medbiz B2B Commerce platform

### 1.2. Compatibility and Medbiz Adoption Decision

Compatibility, as defined by Rogers (1995), indicates how quickly an innovation is perceived as consistent with the values, past experiences, and needs of potential adopters. Innovations that align with existing values and norms are adopted more rapidly than those that do not. This principle underscores the significance of an innovation's alignment with user experiences and needs, affecting its acceptance level. Empirical studies confirm that compatibility positively influences technology adoption decisions (Almunawar et al., 2022; Walker et al., 2016). Therefore, the hypothesis can be stated as follows:

**$H_2$:** Perceived Compatibility positively influences the adoption decision of the Medbiz B2B Commerce platform

### 1.3. Complexity and Medbiz Adoption Decision

Complexity, as defined by Rogers (1995), refers to the extent to which an innovation is perceived as difficult to understand or use. Innovations that are easy to comprehend are adopted more rapidly than those that require users to acquire new skills. Consequently, the greater the complexity of an innovation, the more challenging and prolonged the adoption process becomes. Evidence supports that complexity negatively influences technology adoption decisions (Almunawar et al., 2022). Therefore, the hypothesis can be stated as follows:

**$H_3$:** Perceived Complexity negatively influences the adoption decision of the Medbiz B2B Commerce platform

### 1.4. IT Readiness and Medbiz Adoption Decision

Technology (IT) readiness , as defined by Parasuraman & Colby (2015), refers to an individual's inclination to effectively utilize and adopt technology to achieve objectives. Sila (2013) asserts that technology readiness has a positive effect on technology adoption, especially in B2B commerce. Furthermore, Molla & Licker (2005) found that business resources—such as human, technical, and financial resources—support organizations in adopting e-commerce. This is further validated by Oliveira & Martins (2010) and Rahayu & Day (2015), which show that an organization's technology readiness significantly influences its decision to adopt e-commerce. Thus, the hypothesis can be stated as follows:

**$H_4$:** IT Readiness positively affects the adoption decision of the Medbiz B2B Commerce platform

### 1.5. Top Management Support and Medbiz Adoption Decision

Top management support is vital for determining the level of technology adoption in organizations, as it reflects the political resources associated with B2B commerce adoption (Alsaad et al., 2017). Positive perceptions from top management regarding the usefulness of information systems can lead to managerial actions that facilitate system adoption (Liang et al., 2007). Zheng et al. (2013) and Ocloo et al. (2020) emphasize that top management plays a critical role in enhancing internal capabilities and leveraging available resources for technology adoption decisions. Sudrajad et al. (2023) highlight that strategic alignment and top management support significantly influence e-business implementation. Additionally, Marei et al. (2023) include top management support as a supportive factor for technology adoption within the organizational context. Thus, the hypothesis can be stated as follows:

**$H_5$:** Top Management Support positively affects the adoption decision of the Medbiz B2B Commerce platform

### 1.6. Competitive Pressure and Medbiz Adoption Decision

Competitive pressure is defined as the degree of pressure a company experiences from its industry competitors (Zhu & Kraemer, 2005). In highly competitive environments, companies are more inclined to adopt B2B commerce to secure a competitive edge over their rivals (Alsaad et al., 2017). Wahyuningtyas et al. (2023) note that adopting technologies like online systems to respond to competitive pressure exemplifies how technological advancements and customer demands have transformed the landscape of global business competition. Thus, the hypothesis can be stated as follows:

**$H_6$:** Competitive Pressure positively affects the adoption decision of the Medbiz B2B Commerce platform

### 1.7. Business Partner Pressure and Medbiz Adoption Decision

Business partner pressure describes the influence and pressure a company experiences from its suppliers and customers to adopt B2B commerce technology (Mohtaramzadeh et al., 2018; Sila, 2013). Research by Hamad et al. (2018) and Lip-Sam & Hock-Eam (2011) shows that successful B2B commerce adoption relies on partners' readiness to adopt technology collaboratively in their business operations. This pressure is a crucial factor affecting e-commerce adoption among SMEs (Al-Qirim, 2007). Studies by Ghobakhloo et al. (2011) and Sila (2013) confirm that coercive and normative pressures from suppliers, business partners, and customers influence B2B commerce adoption. Furthermore, Salimon et al. (2023) indicate that the implementation of m-commerce is influenced by business partner pressure. Thus, the hypothesis can be stated as follows:

**$H_7$:** Business Partner Pressure positively affects the adoption decision of the Medbiz B2B Commerce platform

### 1.8. External Support and Medbiz Adoption Decision

SMEs typically face limited resources, including financial constraints and IT skills. Government support through protective policies and regulations, safe internet usage for transactions, and incentives for adopting e-procurement is essential (Zhu & Kraemer, 2005). Studies by Van Huy et al. (2012) and Hussain et al. (2020) confirm that robust government regulations regarding e-commerce significantly impact the adoption of e-commerce technology. Moreover, Maroufkhani et al. (2020) said that CEOs of SMEs are more likely to adopt information systems when they see that IS service providers can meet their needs. Providing training and technical support from BDA service providers can help address managers' concerns about insufficient technical skills. Thus, the hypothesis can be stated as follows:

**$H_8$:** External Support positively affects the adoption decision of the Medbiz B2B Commerce platform

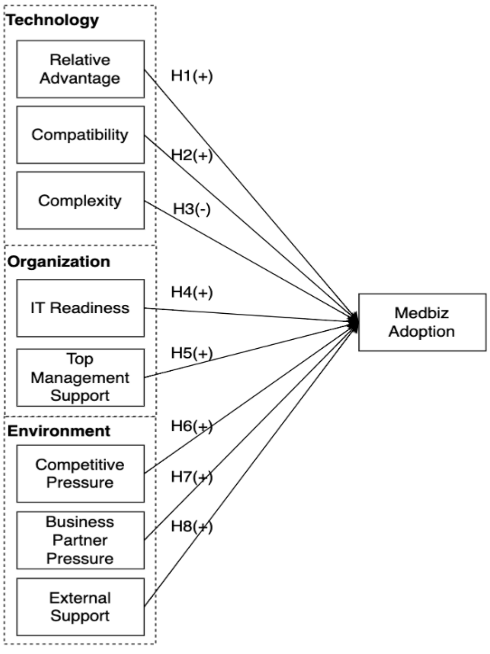


**Figure 1.** Research Framework

## 2. Research Methods

This research is classified as descriptive, aiming to describe phenomena related to the adoption of Medbiz B2B Commerce and to explore relationships between identified variables based on the TOE framework, which includes Relative Advantage, Compatibility, Complexity, IT Readiness, Top Management Support, Competitive Pressure, Business Partner Pressure, and External Support. Utilizing a deductive approach, the study assesses hypotheses against observed facts within an established theoretical context (Cooper & Schindler, 2014). Employing a quantitative method grounded in the positivist research paradigm, the research investigates a specific population through random sampling techniques, focusing on pharmacy retailers and their employees who have used Medbiz. The study is cross-sectional, collecting data through questionnaires at a single point in time. Then, a path analysis approach was applied to test the hypothesized relationships among the variables.

The research population size is 10,000, derived from the number of outlets that have conducted transactions on Medbiz until December 2023. This study applies a 95% confidence level and a 5% margin of error, resulting in a minimum required sample size of 370 samples. However, the author used 372 samples to provide a slightly higher degree of accuracy, account for potential respondent dropouts or incomplete data. Each respondent represents a single representative from each pharmacy outlet. The researcher utilized simple random sampling, to ensure equal chances of selection for each population member (Sugiyono, 2013). The distribution of the questionnaire occurred through online methods (google form), providing flexibility and accessibility to participants. Data were collected using a structured questionnaire that was divided into several sections, each designed to capture a specific construct under investigation. A 4-point modified Likert scale was employed to avoid central tendency bias, which can diminish the quality of research data (Hertanto, 2017; Malone et al., 2014). The questionnaire was distributed via corporate Whatsapp channel (BioCare).

The research measurement items assess various factors influencing the adoption of Medbiz as a B2B commerce platform. Relative Advantage evaluates how Medbiz enhances business efficiency, productivity, and operational quality while offering new opportunities. Compatibility measures the alignment of Medbiz with an outlet's work style, business model, culture, and strategy. Complexity examines the perceived difficulty of implementing Medbiz, requiring high focus and effort from employees. IT Readiness assesses the availability of IT resources and skilled personnel for Medbiz operations. Top Management Support focuses on leadership involvement, including providing instructions, strategies, and performance monitoring for implementation. Competitive Pressure gauges the influence of competitors in driving Medbiz adoption. Business Partner Pressure evaluates the role of distributors in encouraging adoption for seamless transactions. External Support considers the technical support and training provided for Medbiz implementation. Finally, Medbiz Adoption reflects the overall belief in its benefits and the likelihood of regular usage in business operations. The following table presents the detailed research measurement items.

**Table 1.** Research Measurement Items

| Construct | | Indicator | References |
|---|---|---|---|
| Relative Advantage ($X_1$) | $TX_{11}$ | Using Medbiz makes our business processes more efficient. | (Alsaad et al., 2017) |
| | $TX_{12}$ | The implementation of Medbiz speeds up the completion of tasks. | |
| | $TX_{13}$ | The implementation of Medbiz improves our operational quality. | |
| | $TX_{14}$ | The implementation of Medbiz offers new opportunities. | |
| | $TX_{15}$ | The implementation of Medbiz increases business productivity. | |
| Compatibility ($X_2$) | $TX_{21}$ | The implementation of Medbiz aligns with our outlet/store work style. | (Alsaad et al., 2017) |
| | $TX_{22}$ | The implementation of Medbiz fits our current business operation model. | |
| | $TX_{23}$ | The implementation of Medbiz is in accordance with our culture and values. | |
| | $TX_{24}$ | The implementation of Medbiz is aligned with our outlet business strategy. | |
| Complexity ($X_3$) | $TX_{31}$ | The implementation of Medbiz requires high focus and attention. | (Alsaad et al., 2017) |
| | $TX_{32}$ | The implementation of Medbiz is difficult to apply in our business operations. | |
| | $TX_{33}$ | The implementation of Medbiz is challenging for our employees. | |
| IT Readiness ($X_4$) | $OX_{41}$ | We have sufficient IT resources (mobile phones/tablets/laptops) for the implementation of Medbiz. | (Ocloo et al., 2020) |
| | $OX_{42}$ | We have skilled personnel to operate Medbiz. | |
| Top Management Support ($X_5$) | $OX_{51}$ | Outlet/store leaders provide clear instructions regarding the implementation of Medbiz. | (Alsaad et al., 2017) |
| | $OX_{52}$ | Store/outlet leaders communicate the strategy for implementing Medbiz. | |
| | $OX_{53}$ | Store/outlet leaders convey targets and standards to monitor the implementation of Medbiz. | |
| Competitive Pressure ($X_6$) | $EX_{61}$ | I believe that the implementation of Medbiz can impact competition in the pharmaceutical industry. | (Alsaad et al., 2017) |
| | $EX_{62}$ | Our store/outlet is prompted by competitors to implement Medbiz or similar applications. | |
| | $EX_{63}$ | Some competitors have already implemented Medbiz or similar applications. | |
| Business Partner Pressure ($X_7$) | $EX_{71}$ | Distributors encourage us to implement Medbiz. | (Ghobakhloo et al., 2011) |

| Construct | | Indicator | References |
|---|---|---|---|
| | $EX_{72}$ | Distributors ask us to implement Medbiz in order to conduct transactions with them. | (Ocloo et al., 2020) |
| External Support ($X_8$) | $EX_{81}$ | We receive good technical support for the implementation of Medbiz. | (Ghobakhloo et al., 2011) |
| | $EX_{82}$ | We receive adequate training to implement Medbiz. | |
| Medbiz Adoption (Y) | $EY_1$ | I believe that the implementation of Medbiz will be beneficial for the company. | (bin Illyas Tan & bt Ibrahim, 2010; Cheng & Yue, 2006; Gong & Kan, 2013) |
| | $EY_2$ | I believe that the company will use Medbiz regularly in its operational activities. | |

Source: processed data

The analysis utilized Structural Equation Modelling (SEM) as a multivariate analysis technique, specifically Partial Least Squares Path Modeling (PLS-SEM), to accommodate smaller samples and various measurement scales (Ghozali & Latan, 2015; Hamid & Anwar, 2019). The evaluation criteria for the outer model include convergent validity, assessed by a loading factor greater than 0.60, and AVE exceeding 0.50; discriminant validity, determined by the square root of AVE being higher than the correlations among latent constructs; and reliability, measured through composite reliability and Cronbach's alpha, both exceeding 0.70. This research was conducted in accordance with ethical principles. Prior to participation, all respondents were fully informed about the study's objectives and given the opportunity to provide their consent voluntarily. They were assured that their responses would remain anonymous and confidential, with no personally identifiable information being collected. The study strictly followed ethical guidelines to uphold participants' rights to privacy and confidentiality throughout the research process.

## 3. Results and Discussions

The following section presents the respondents' profiles for this study. It includes key demographic and organizational characteristics such as gender, age, job position, department, and transaction frequency. These variables help contextualize the analysis by illustrating the background of Medbiz platform users.

**Table 2.** Respondent Profile

| Characteristics | Quality | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 97 | 26 |
| Female | 275 | 74 |
| **Age** | | |
| < 30 y.o | 117 | 31 |
| 30 – 39 y.o | 174 | 47 |
| 30 – 49 y.o | 60 | 16 |
| > 50 y.o | 21 | 6 |
| **Position** | | |
| Pharmacy assistant | 19 | 5 |
| Purchasing | 20 | 5 |

| Characteristics | Quality | Percentage |
|---|---|---|
| Business owner | 98 | 26 |
| Person in charge | 40 | 11 |
| Staff | 157 | 42 |
| Supervisor | 38 | 10 |
| **Work Department** | | |
| Administration | 60 | 16 |
| Logistics | 117 | 31 |
| Sales | 136 | 37 |
| Other | 59 | 16 |
| **Number of Transactions** | | |
| <10 | 236 | 63 |
| 10-30 | 78 | 21 |
| 31-50 | 38 | 10 |
| >50 | 20 | 5 |

Source: processed data

Understanding these characteristics is essential for interpreting adoption behavior. The profile also supports the relevance and representativeness of the sample. Detailed results are outlined in the corresponding Table 1. The data indicates that most respondents are female (74%) and aged between 30 and 39 (47%). Regarding position, the largest group consists of staff (42%), while the majority work in the sales department (37%). Additionally, most respondents have fewer than 10 transactions (63%).

### 3.1. Outer Model Test

The first step in conducting data analysis techniques involves assessing the outer model. This stage is carried out by evaluating the data based on three criteria: convergent validity, discriminant validity, and reliability testing (Hamid & Anwar, 2019). The first test output, the discriminant validity is observed to be inadequate due to two main reasons: first, the indicators in construct Compatibility ($X_2$) which are $TX_{22}$, $TX_{23}$, and $TX_{24}$, exhibit higher cross-loading values on another construct Top Management Support ($X_5$) compared to their own construct Compatibility ($X_2$). Second, the diagonal values (square root of AVE) of several constructs are smaller than the correlation values among other constructs, specifically between Compatibility ($X_2$) and Top Management Support ($X_5$). Based on the VIF values, it is evident that $TX_{22}$ and $TX_{23}$ are categorized as problematic indicators, as they have VIF values exceeding 10, which falls into the category of critical multicollinearity (Hair et al., 2019).

**Table 3**. VIF Value of $TX_{22}$ $TX_{23}$ $TX_{24}$

| Indicator | VIF Value |
|---|---|
| $TX_{22}$ | 25.065.209.343.320.300.000 |
| $TX_{23}$ | 25.065.209.343.320.300.000 |
| $TX_{24}$ | 3,669 |

Source: processed data

Therefore, those indicators were removed from the model to address validity and multicollinearity concerns. Their exclusion enhances the precision and reliability of the measurement constructs. The following section presents the results of the outer model calculations after the removal. This refinement ensures that only valid and stable indicators are retained. As a result, the measurement model becomes more robust. These improvements lay the groundwork for accurate structural analysis.

The AVE values of all constructs are 0.5 or higher, indicating that the constructs have acceptable convergent validity. This means that each construct can explain at least 50% of the variance in its indicators, which aligns with the commonly accepted threshold in structural equation modeling. A high AVE value supports the notion that the indicators correlate well with their respective latent variables and collectively represent the underlying construct effectively.

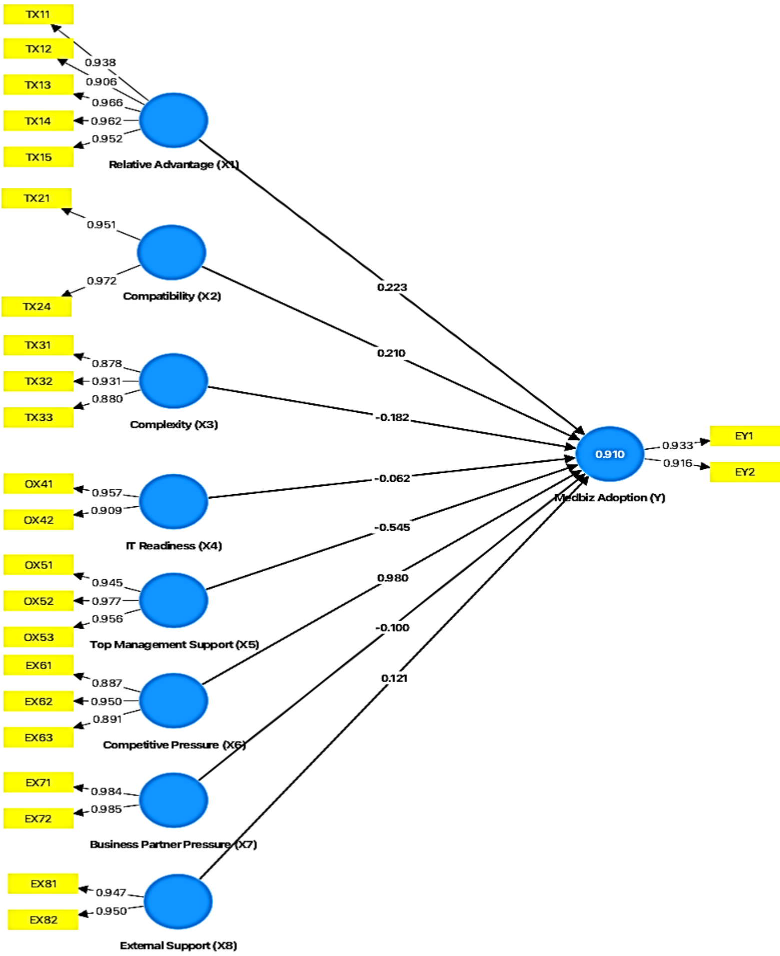


**Figure 1**. Outer Model

Further assessment of convergent validity was carried out using outer loading values, following the removal of indicators $TX_{22}$ and $TX_{23}$. Outer loading reflects the correlation between each observed indicator (manifest variable) and its latent construct. A high outer loading value typically above 0.7 indicates that an indicator reliably represents the construct it is intended to measure. This step ensures that only indicators with strong contributions to the construct are retained, thereby enhancing the validity and reliability of the measurement model.

**Table 4**. Average Variance Extracted (AVE) Value

| Construct | Average Variance Extracted (AVE) | Threshold | Result |
|---|---|---|---|
| Relative advantage ($X_1$) | 0.893 | 0.5 | Valid |
| Compatibility ($X_2$) | 0.924 | 0.5 | Valid |
| Complexity ($X_3$) | 0.804 | 0.5 | Valid |
| IT Readiness ($X_4$) | 0.871 | 0.5 | Valid |
| Top management support ($X_5$) | 0.920 | 0.5 | Valid |
| Competitive pressure ($X_6$) | 0.828 | 0.5 | Valid |
| Business partner pressure ($X_7$) | 0.969 | 0.5 | Valid |
| External support ($X_8$) | 0.900 | 0.5 | Valid |
| Medbiz adoption (Y) | 0.854 | 0.5 | Valid |

Source: processed data

**Table 5**. Loading Factor (Outer Loading) Value

| Construct | Indicator | Outer Loading | Threshold | Result |
|---|---|---|---|---|
| Relative advantage ($X_1$) | $TX_{11}$ | 0.887 | 0.6 | Reliable |
| | $TX_{12}$ | 0.950 | 0.6 | Reliable |
| | $TX_{13}$ | 0.891 | 0.6 | Reliable |
| | $TX_{14}$ | 0.984 | 0.6 | Reliable |
| | $TX_{15}$ | 0.985 | 0.6 | Reliable |
| Compatibility ($X_2$) | $TX_{21}$ | 0.947 | 0.6 | Reliable |
| | $TX_{24}$ | 0.950 | 0.6 | Reliable |
| Complexity ($X_3$) | $TX_{31}$ | 0.933 | 0.6 | Reliable |
| | $TX_{32}$ | 0.916 | 0.6 | Reliable |
| | $TX_{33}$ | 0.957 | 0.6 | Reliable |
| IT Readiness ($X_4$) | $OX_{41}$ | 0,909 | 0.6 | Reliable |
| | $OX_{42}$ | 0.945 | 0,6 | Reliable |
| Top management support ($X_5$) | $OX_{51}$ | 0.977 | 0.6 | Reliable |
| | $OX_{52}$ | 0.956 | 0.6 | Reliable |
| | $OX_{53}$ | 0.906 | 0.6 | Reliable |
| Competitive pressure ($X_6$) | $EX_{61}$ | 0,966 | 0.6 | Reliable |
| | $EX_{62}$ | 0.962 | 0.6 | Reliable |
| | $EX_{63}$ | 0.952 | 0.6 | Reliable |
| Business partner pressure ($X_7$) | $EX_{71}$ | 0.951 | 0.6 | Reliable |
| | $EX_{72}$ | 0.972 | 0.6 | Reliable |
| External support ($X_8$) | $EX_{81}$ | 0,878 | 0.6 | Reliable |
| | $EX_{82}$ | 0.931 | 0.6 | Reliable |
| Medbiz adoption (Y) | $EY_1$ | 0.880 | 0.6 | Reliable |
| | $EY_2$ | 0.938 | 0.6 | Reliable |

Source: processed data

The results of the loading factor calculations for each indicator, with values above threshold, indicate good convergent validity and a strong correlation between the indicators and the construct.

This suggests that each indicator effectively reflects the intended construct. The next stage is to test discriminant validity, which is an important aspect to ensure that a construct is distinct and unique compared to other constructs within the model. This study employs two methods to assess discriminant validity: Cross Loadings and the Fornell-Larcker criterion. The cross-loading test examines whether the loading of each indicator is highest on the construct it is intended to measure compared to other constructs. Meanwhile, the Fornell-Larcker criterion test is a widely used method for assessing discriminant validity based on the comparison between the square root of the Average Variance Extracted (AVE) and the correlations among constructs.

Table 6 shows results of the cross-loading calculations. after trimming the indicators $TX_{22}$ and $TX_{23}$. which is demonstrate good discriminant validity. This is evidenced by each indicator from their respective constructs having the highest loading on their own construct compared to other constructs. Following is the result of Fornell-Larcker criterion test.

**Table 6**. Discriminant Validity Test (Cross-Loading)

| Indicator | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | Y |
|---|---|---|---|---|---|---|---|---|---|
| $TX_{11}$ | **0.938** | 0.814 | 0.051 | 0.509 | 0.655 | 0.664 | 0.917 | 0.770 | 0.624 |
| $TX_{12}$ | **0.906** | 0.869 | 0.054 | 0.515 | 0.735 | 0.727 | 0.874 | 0.872 | 0.640 |
| $TX_{13}$ | **0.966** | 0.856 | -0.064 | 0.397 | 0.692 | 0.663 | 0.830 | 0.817 | 0.682 |
| $TX_{14}$ | **0.962** | 0.811 | -0.154 | 0.393 | 0.792 | 0.775 | 0.729 | 0.794 | 0.754 |
| $TX_{15}$ | **0.952** | 0.797 | -0.159 | 0.387 | 0.787 | 0.769 | 0.712 | 0.781 | 0.747 |
| $TX_{21}$ | 0.806 | **0.951** | -0.179 | 0.551 | 0.916 | 0.715 | 0.802 | 0.859 | 0.595 |
| $TX_{24}$ | 0.872 | **0.972** | -0.076 | 0.439 | 0.823 | 0.826 | 0.847 | 0.920 | 0.779 |
| $TX_{31}$ | 0.057 | 0.036 | **0.878** | -0.508 | -0.037 | -0.292 | 0.092 | -0.021 | -0.391 |
| $TX_{32}$ | -0.122 | -0.212 | **0.931** | -0.484 | -0.307 | -0.338 | -0.043 | -0.143 | -0.377 |
| $TX_{33}$ | -0.117 | -0.169 | **0.880** | -0.198 | -0.207 | -0.235 | -0.052 | -0.181 | -0.352 |
| $OX_{41}$ | 0.492 | 0.482 | -0.348 | **0.957** | 0.546 | 0.727 | 0.564 | 0.452 | 0.641 |
| $OX_{42}$ | 0.346 | 0.464 | -0.527 | **0.909** | 0.452 | 0.499 | 0.432 | 0.411 | 0.445 |
| $OX_{51}$ | 0.799 | 0.888 | -0.106 | 0.538 | **0.945** | 0.848 | 0.745 | 0.857 | 0.691 |
| $OX_{52}$ | 0.719 | 0.870 | -0.266 | 0.523 | **0.977** | 0.781 | 0.632 | 0.720 | 0.612 |
| $OX_{53}$ | 0.712 | 0.816 | -0.221 | 0.493 | **0.956** | 0.764 | 0.620 | 0.681 | 0.599 |
| $EX_{61}$ | 0.720 | 0.692 | -0.285 | 0.813 | 0.668 | **0.887** | 0.810 | 0.706 | 0.832 |
| $EX_{62}$ | 0.710 | 0.793 | -0.363 | 0.655 | 0.772 | **0.950** | 0.655 | 0.791 | 0.881 |
| $EX_{63}$ | 0.653 | 0.718 | -0.224 | 0.352 | 0.847 | **0.891** | 0.519 | 0.710 | 0.757 |
| $EX_{71}$ | 0.831 | 0.836 | -0.004 | 0.534 | 0.682 | 0.703 | **0.984** | 0.860 | 0.647 |
| $EX_{72}$ | 0.847 | 0.856 | 0.006 | 0.537 | 0.692 | 0.734 | **0.985** | 0.813 | 0.682 |
| $EX_{81}$ | 0.820 | 0.876 | -0.054 | 0.531 | 0.731 | 0.778 | 0.892 | **0.947** | 0.727 |
| $EX_{82}$ | 0.797 | 0.884 | -0.182 | 0.352 | 0.767 | 0.759 | 0.721 | **0.950** | 0.749 |
| $EY_1$ | 0.756 | 0.746 | -0.446 | 0.696 | 0.719 | 0.909 | 0.715 | 0.769 | **0.933** |
| $EY_2$ | 0.591 | 0.590 | -0.319 | 0.394 | 0.496 | 0.762 | 0.523 | 0.665 | **0.916** |

Source: Processed data

The square root of the AVE for each construct exceeds its correlations with other constructs, confirming discriminant validity. This suggests that each construct is empirically distinct and measures unique aspects of the model. It also indicates that the constructs explain more variance in their indicators than in others. Establishing discriminant validity is critical to avoid multicollinearity and conceptual overlap. These findings strengthen the credibility of the measurement model. Overall, the results meet the recommended validity standards.

**Table 7**. Discriminant Validity Test (Fornell-Larcker)

| Construct | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | Y |
|---|---|---|---|---|---|---|---|---|---|
| $X_1$ | **0.945** | | | | | | | | |
| $X_2$ | 0.876 | **0.961** | | | | | | | |
| $X_3$ | -0.065 | -0.125 | **0.897** | | | | | | |
| $X_4$ | 0.461 | 0.506 | -0.449 | **0.933** | | | | | |
| $X_5$ | 0.778 | 0.896 | -0.202 | 0.541 | **0.959** | | | | |
| $X_6$ | 0.764 | 0.808 | -0.323 | 0.676 | 0.834 | **0.910** | | | |
| $X_7$ | 0.853 | 0.860 | 0.001 | 0.544 | 0.698 | 0.730 | **0.984** | | |
| $X_8$ | 0.852 | 0.928 | -0.126 | 0.464 | 0.790 | 0.810 | 0.849 | **0.948** | |
| Y | 0.733 | 0.727 | -0.417 | 0.598 | 0.664 | 0.908 | 0.675 | 0.778 | **0.924** |

Source: processed data

**Table 8**. Reliability Test

| Construct | Cronbanch Alpha | Dijkstra-Henseler's (rho_a) | Composite Reliability (rho_c) | Threshold | Result |
|---|---|---|---|---|---|
| Relative advantage ($X_1$) | 0.97 | 0.975 | 0.977 | 0.7 | Reliable |
| Compatibility ($X_2$) | 0.919 | 0.969 | 0.961 | 0.7 | Reliable |
| Complexity ($X_3$) | 0.878 | 0.88 | 0.925 | 0.7 | Reliable |
| IT Readiness ($X_4$) | 0.857 | 0.94 | 0.931 | 0.7 | Reliable |
| Top management support ($X_5$) | 0.957 | 0.962 | 0.972 | 0.7 | Reliable |
| Competitive pressure ($X_6$) | 0.896 | 0.902 | 0.935 | 0.7 | Reliable |
| Business partner pressure ($X_7$) | 0.968 | 0.97 | 0.984 | 0.7 | Reliable |
| External support ($X_8$) | 0.888 | 0.889 | 0.947 | 0.7 | Reliable |
| Medbiz adoption (Y) | 0.83 | 0.837 | 0.921 | 0.7 | Reliable |

Source : Processed data

The reliability test results indicate excellent outcomes across the three metrics (Cronbach's Alpha, rho_A, and composite reliability). All constructs demonstrate strong internal consistency, with values significantly exceeding the recommended thresholds. The tested constructs can be considered reliable and are ready for further analysis, indicating that the indicators are consistent and accurately reflect the constructs.

### 3.2. Inner Model Test

The initial step in evaluating the inner model involves performing the R-Square (Coefficient of Determination) test, which assesses how much of the variance in the dependent variable (in this instance, Medbiz Adoption) can be accounted for by the independent variables within the model. R-Square values range from 0 to 1, where a higher value signifies a better fit of the model in explaining the variability of the dependent variable. In the context of the inner model, R-Square values are categorized as strong (0,75), moderate (0,50), and weak (0,25). The significance of the relationships (hypotheses testing) is evaluated using a one-tailed test with a critical value (t-value) of 1,64 at a 5% significance level, with path coefficients derived from bootstrapping results using PLS. These criteria provide a thorough evaluation of the model's explanatory capability and the significance of the relationships among the constructs.

In the above table, the R-Square value for Medbiz Adoption (Y) is 0.910, indicating that the model accounts for 91% of the variance in Medbiz adoption. This suggests that the model has very strong predictive power. The high R-Square value reflects that the independent variables effectively explain user behavior toward the platform. Only 9% of the variance is attributed to factors outside the model. This level of explanatory strength supports the model's robustness. It confirms the suitability of the selected constructs for predicting adoption.

### 3.3. Direct Effect

The direct effects of Relative Advantage, Compatibility, Competitive Pressure, and External Support are positive and statistically significant, indicating a strong influence on Medbiz adoption. Complexity has a negative and significant impact, confirming its role as an adoption barrier. In contrast, IT Readiness, Top Management Support, and Business Partner Pressure exhibit negative and insignificant effects, resulting in hypothesis rejection. These direct relationships are explained in detail in the following Table 9.

**Table 9**. Hypotheses Test

| Path | Original sample (O) | Standard deviation (STDEV) | T statistics (O/STDEV) | P values | Critical t-value | Result | Conclusion |
|---|---|---|---|---|---|---|---|
| Relative advantage ($X_1$) => Medbiz adoption (Y) | 0.223 | 0.031 | 7.163 | 0.000 | > 1.64 | Positive significant | Accepted |
| Compatibility ($X_2$) => Medbiz adoption (Y) | 0.210 | 0.069 | 3.023 | 0.001 | > 1.64 | Positive significant | Accepted |
| Complexity ($X_3$) => Medbiz Adoption (Y) | -0.182 | 0.015 | -12.378 | 0.000 | < -1.64 | Negative significant | Accepted |
| IT Readiness ($X_4$) => Medbiz Adoption (Y) | -0.062 | 0.016 | -3.956 | 0.000 | > 1.64 | Negative insignificant | Rejected |
| Top Management Support ($X_5$) => Medbiz Adoption (Y) | -0.545 | 0.031 | -17.406 | 0.000 | > 1.64 | Negative insignificant | Rejected |
| Competitive Pressure ($X_6$) => Medbiz Adoption (Y) | 0.980 | 0.025 | 38.494 | 0.000 | > 1.64 | Positive significant | Accepted |
| Business Partner Pressure ($X_7$) => Medbiz Adoption (Y) | -0.100 | 0.044 | -2.259 | 0.012 | > 1.64 | Negative insignificant | Rejected |
| External Support ($X_8$) => Medbiz Adoption (Y) | 0.121 | 0.046 | 2.614 | 0.005 | > 1.64 | Positive significant | Accepted |

Source: processed data

The result of this study highlights key influences on adopting the Medbiz B2B Commerce platform. The study confirms that Perceived Relative Advantage has a significant and positive impact on adopting Medbiz. Respondents generally acknowledge the benefits of Medbiz, such as real-time stock features, process automation, and improved data integrity, which reduce human errors and enhance business productivity. These findings align with Rogers (1995) innovation diffusion theory, which states that higher relative advantage accelerates adoption rates. Supporting studies by Ghobakhloo et al. (2011), Hamad et al. (2018), Martadikusumah & Indirawati (2023), Noviaristanti & Huda (2022), Rahayu & Day (2015) further reinforce the importance of relative advantage in B2B commerce adoption. The results indicate a positive and significant relationship between Perceived Compatibility and Medbiz adoption. The platform aligns with the existing business workflows of pharmacy outlets, supporting their operations, particularly through real-time stock features. These findings support the hypothesis ($H_2$) and prior studies demonstrating the positive influence of compatibility on technology adoption (Almunawar et al., 2022; Walker et al., 2016). Ensuring ongoing alignment with business processes through continuous user feedback will be crucial for sustaining adoption.

Conversely, perceived complexity has a negative and significant effect on Medbiz adoption. Many respondents perceive Medbiz as difficult to implement due to factors such as slow website loading times, captcha requirements, technical payment issues, and a complicated registration process. This finding is consistent with theory, which states that greater complexity hinders adoption (Rogers, 1995). Addressing these usability issues, such as improving interface design, simplifying processes, and enhancing overall user experience, is essential for increasing adoption rates. Surprisingly, IT Readiness does not significantly affect Medbiz adoption, contradicting the hypothesis ($H_4$) and previous studies (Molla & Licker, 2005; Oliveira & Martins, 2010b; Rahayu & Day, 2015). Despite limited IT resources, businesses still adopt Medbiz based on other factors such as relative advantage, compatibility, and ease of use. Interviews with the Medbiz team suggest that distributors currently provide full technical support, which may reduce the importance of IT readiness in adoption decisions.

The study also found that Top Management Support does not significantly influence Medbiz adoption, contradicting prior research (Alsaad et al., 2017; Liang et al., 2007; Marei et al., 2023). While senior management may support technology adoption, operational challenges, lack of oversight, and resistance from lower-level employees accustomed to traditional systems may impede its effectiveness. This finding highlights the need for more inclusive implementation strategies that involve all organizational levels. A strong positive relationship was found between Competitive Pressure and Medbiz adoption. Companies facing higher competitive pressure are more likely to adopt Medbiz to remain competitive, improve efficiency, and avoid losing market opportunities. These findings support hypothesis ($H_6$) and align with previous research on technology adoption under competitive pressure (Alsaad et al., 2017; Zhu & Kraemer, 2005). Promoting case studies showcasing successful Medbiz adoption may further encourage adoption among hesitant businesses.

Contrary to expectations, Business Partner Pressure does not significantly influence Medbiz adoption, contradicting the hypothesis (H7) and prior studies (Mohtaramzadeh et al., 2018; Sila, 2013). Interviews with the Medbiz team suggest that pharmacy retailers have multiple distributor options, reducing the influence of any single distributor in enforcing technology adoption. This finding implies that B2B platforms may need additional incentives beyond distributor pressure to encourage adoption. External Support has a positive and significant impact on Medbiz adoption. The availability of training, technical assistance, and user support groups plays a crucial role in facilitating adoption. These findings align with the hypothesis ($H_8$) and prior studies emphasizing the role of external support in technology adoption (Maroufkhani et al., 2020; Van Huy et al., 2012; Zhu & Kraemer, 2005). Expanding training programs and enhancing technical support will be key strategies for sustaining adoption growth.

This study makes key contributions to the theoretical understanding of technology adoption using the TOE framework, particularly in the context of pharmaceutical B2B commerce in Indonesia from a retailer's perspective. The findings indicate that relative advantage, compatibility, competitive pressure, and external support have a positive and significant influence on the adoption of Medbiz. Conversely, perceived complexity has a significant negative impact on its adoption. Meanwhile in this case, IT readiness, top management support, and business partner pressure exhibit negative but insignificant effects.

The findings of this study have significant practical implications for managers and decision-makers in Medbiz management, as well as other B2B commerce platform providers in the pharmaceutical industry seeking to enhance adoption rates. To improve the adoption of Medbiz, the platform provider should focus on key influencing factors: Relative Advantage, by continuously enhancing features that boost productivity and efficiency to ensure sustained usage; Compatibility, by maintaining alignment with existing business workflows and actively involving users in product development through feedback; Complexity, by reducing barriers such as slow loading speeds, complicated registration, and inefficient payment processes, ensuring a more user-friendly experience; Competitive Pressure, by leveraging case studies and outreach programs to demonstrate the strategic benefits of Medbiz and encourage broader adoption; and External Support, by expanding training programs to help users operate Medbiz effectively while strengthening technical support for long-term adoption. Addressing these factors will not only increase adoption rates but also reinforce Medbiz's market position, driving greater efficiency and innovation in B2B pharmaceutical commerce.

## 4. Conclusions

The findings of this study highlight the importance of relative advantage, compatibility, competitive pressure, and external support in driving Medbiz adoption, while complexity remains a barrier that must be addressed. Unexpected findings regarding IT readiness, top management support, and business partner pressure suggest that Medbiz adoption is driven more by perceived benefits and external market forces rather than internal organizational readiness or mandates. Addressing usability concerns and reinforcing Medbiz's value proposition through case studies and enhanced support structures will be critical for increasing adoption rates in the long term. However, this study has several methodological limitations. As a cross-sectional study, it captures data at a single point in time, limiting insights into changes in adoption behavior over time. The reliance on self-reported data may introduce response bias, despite efforts to minimize it through a 4-point Likert scale. The study focuses solely on pharmacy retailers and employees, omitting perspectives from suppliers, distributors, and policymakers, which may limit generalizability. While PLS-SEM is effective for small samples, it has limitations in causal inference, suggesting the need for alternative methods like CB-SEM in future research. Moreover, external factors such as regulatory changes, economic conditions, and technological advancements were not explicitly considered, potentially impacting Medbiz adoption. Additionally, future research should explore the financial readiness as a driving factor in light of potential future charging fees for the platform. Despite these limitations, this study provides valuable insights and a strong foundation for understanding B2B commerce adoption in the pharmaceutical industry.

## References

Almunawar, M. N., Auzzali, A., Oseli, N. H., & Ariff, W. Z. A. M. Z. (2022). E-commerce adoption among micro, small, and medium enterprises in Brunei Darussalam. *International Journal of E-Business Research*, *18*(1), 1–18. https://doi.org/10.4018/IJEBR.293297

Al-Qirim, N. (2007). The adoption of e-commerce communications and applications technologies in small businesses in New Zealand. *Electronic Commerce Research and Applications*, *6*(4), 462–473. https://doi.org/10.1016/j.elerap.2007.02.012

Alsaad, A., Mohamad, R., & Ismail, N. A. (2017). The moderating role of trust in business to business electronic commerce (B2B EC) adoption. *Computers in Human Behavior*, *68*, 157–169. https://doi.org/10.1016/j.chb.2016.11.040

Andi, D. (2023). *Bio Farma rilis aplikasi digital untuk perkuat distribusi obat dan alat kesehatan* (Y. Winarto, Ed.). https://industri.kontan.co.id/news/bio-farma-rilis-aplikasi-digital-untuk-perkuat-distribusi-obat-dan-alat-kesehatan

Ayawei, M. J., Raborife, M., & Maduku, D. K. (2023). Assessing the factors underlying the adoption of e-commerce among B2B SMEs. *Journal of Electronic Commerce in Organizations, 21*(1), 1–26. https://doi.org/10.4018/JECO.333612

bin Illyas Tan, M. I., & bt Ibrahim, I. S. (2010). Supply chain management and e-commerce technology adoption among logistics service providers in Malaysia. *International Journal of Economics and Management Engineering, 4*(5), 497–502.

Chatra, M. A. (2023). *Manajemen rantai pasok*. PT Sonpedia Penerbit Indonesia.

Cheng, W., & Yue, C. (2006). *Utilizing e-logistics: Case studies in Sweden and China*. [Tidak ada informasi penerbit atau DOI]

Chwelos, P., Benbasat, I., & Dexter, A. S. (2001). Research report: Empirical test of an EDI adoption model. *Information Systems Research, 12*(3), 304–321. https://doi.org/10.1287/isre.12.3.304.9708

Cooper, D. R., & Schindler, P. (2014). *Business research methods* (12th ed.). McGraw-Hill Education.

Fagasta, T. A., Wicaksono, W., & Arifin, W. R. (2017). Sistem informasi penjualan dan pembelian obat pada Apotek Nabila Care Bekasi. *Jurnal Mahasiswa Bina Insani*, 1–12. https://ejournal-binainsani.ac.id/index.php/JMBI/article/view/625

Freddy. (2022, April 5). *The rise of B2B e-commerce marketplace in Asia*. https://www.cadvisory.co/post/the-rise-of-b2b-ecommerce-marketplace-in-asia

Gavin, R., Harrison, L., Plotkin, C. L., Spillecke, D., & Stanley, J. (2020). *The B2B digital inflection point: How sales have changed during COVID-19*.

Ghobakhloo, M., Arias-Aranda, D., & Benitez-Amado, J. (2011). Adoption of e-commerce applications in SMEs. *Industrial Management & Data Systems, 111*(8), 1238–1269. https://doi.org/10.1108/02635571111170785

Ghozali, I., & Latan, H. (2015). *Partial least squares: Konsep, teknik dan aplikasi menggunakan program SmartPLS 3.0 untuk penelitian empiris*. Badan Penerbit UNDIP.

Gong, W., & Kan, X. (2013). Logistic service development of e-commerce: A case study of AliExpress—An online international trade platform in China.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage. https://books.google.co.id/books?id=0R9ZswEACAAJ

Hamad, H., Elbeltagi, I., & El-Gohary, H. (2018). An empirical investigation of business-to-business e-commerce adoption and its impact on SMEs' competitive advantage: The case of Egyptian manufacturing SMEs. *Strategic Change, 27*(3), 209–229. https://doi.org/10.1002/jsc.2196

Hamid, R. S., & Anwar, S. M. (2019). *Structural equation modeling (SEM) berbasis varian: Konsep dasar dan aplikasi dengan program SmartPLS 3.2.8 dalam riset bisnis*. PT Inkubator Penulis Indonesia.

Hertanto, E. (2017). Perbedaan skala Likert lima skala dengan modifikasi skala Likert empat skala. *Metodologi Penelitian, 2*(2–3).

Hussain, A., Shahzad, A., & Hassan, R. (2020). Organizational and environmental factors with the mediating role of e-commerce and SME performance. *Journal of Open Innovation: Technology, Market, and Complexity, 6*(4), 196. https://doi.org/10.3390/joitmc6040196

Iacovou, C. L., Benbasat, I., & Dexter, A. S. (1995). Electronic data interchange and small organizations: Adoption and impact of technology. *MIS Quarterly*, 465–485.

IGM. (2023, April 4). *Medbiz: Marketplace B2B khusus farmasi dan alkes*. https://igm.co.id/artikel/2023/04/04/medbiz/

Ito, A., & Ylipaa, T. (2021). Dealing with resistance to the use of Industry 4.0 technologies in production disturbance management. *Journal of Manufacturing Technology Management*, 285–303.

Li, J. C. F. (2020). Roles of individual perception in technology adoption at organization level:

Behavioral model versus TOE framework. *Journal of System and Management Sciences, 10*(3), 97–118.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly,* 59–87.

Lip-Sam, T., & Hock-Eam, L. (2011). Estimating the determinants of B2B e-commerce adoption among small & medium enterprises. *International Journal of Business & Society, 12*(1).

Ma, J.-Y., Shi, L., & Kang, T.-W. (2023). The effect of digital transformation on the pharmaceutical sustainable supply chain performance: The mediating role of information sharing and traceability using structural equation modeling. *Sustainability, 15*(1). https://doi.org/10.3390/su15010649

Malone, H., Nicholl, H., & Tracey, C. (2014). Awareness and minimisation of systematic bias in research. *British Journal of Nursing, 23*(5), 279–282.

Marei, A., Mustafa, J. A., Othman, M., Daoud, L., Lutfi, A., & Al-Amarneh, A. (2023). The moderation of organizational readiness on the relationship between TOE factors and fintech adoption and financial performance. *Journal of Law and Sustainable Development, 11*(3). https://doi.org/10.55908/sdgs.v11i3.730

Maroufkhani, P., Tseng, M.-L., Iranmanesh, M., Ismail, W. K. W., & Khalid, H. (2020). Big data analytics adoption: Determinants and performances among small to medium-sized enterprises. *International Journal of Information Management, 54,* 102190. https://doi.org/10.1016/j.ijinfomgt.2020.102190

Martadikusumah, T. A. A., & Indirawati. (2023). Digital marketing implementation by culinary micro small medium enterprises during COVID-19 (An Indonesia case). *Quality-Access to Success, 25*(198). https://doi.org/10.47750/qas/25.198.25

Mohtaramzadeh, M., Ramayah, T., & Jun-Hwa, C. (2018). B2B e-commerce adoption in Iranian manufacturing companies: Analyzing the moderating role of organizational culture. *International Journal of Human-Computer Interaction, 34*(7), 621–639. https://doi.org/10.1080/10447318.2017.1385212

Molla, A., & Licker, P. S. (2005). E-commerce adoption in developing countries: A model and instrument. *Information and Management, 42*(6), 877–899. https://doi.org/10.1016/j.im.2004.09.002

Nguyen, T. H., Le, X. C., & Vu, T. H. L. (2022). An extended Technology-Organization-Environment (TOE) framework for online retailing utilization in digital transformation: Empirical evidence from Vietnam. *Journal of Open Innovation: Technology, Market, and Complexity, 8*(4), 200. https://doi.org/10.3390/joitmc8040200

Noviaristanti, S., & Huda, Y. M. (2022). Factor affecting e-marketplace adoption on MSMEs in Bandung, Indonesia. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (pp. 2361–2372).

Ocloo, C. E., Xuhua, H., Akaba, S., Shi, J., & Worwui-Brown, D. K. (2020). The determinant factors of business to business (B2B) e-commerce adoption in small- and medium-sized manufacturing enterprises. *Journal of Global Information Technology Management*, 191–216. https://doi.org/10.1080/1097198X.2020.1792229

Oliveira, T., & Martins, M. F. (2010). Understanding e-business adoption across industries in European countries. *Industrial Management & Data Systems, 110*(9), 1337–1354. https://doi.org/10.1108/02635571011087428

Parasuraman, A., & Colby, C. L. (2015). An updated and streamlined technology readiness index: TRI 2.0. *Journal of Service Research, 18*(1), 59–74.

Rahayu, R., & Day, J. (2015). Determinant factors of e-commerce adoption by SMEs in developing country: Evidence from Indonesia. *Procedia - Social and Behavioral Sciences, 195,* 142–150. https://doi.org/10.1016/j.sbspro.2015.06.423

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). Free Press.

Salimon, M. G., Kareem, O., Mokhtar, S. S. M., Aliyu, O. A., Bamgbade, J. A., & Adeleke, A. Q.

(2023). Malaysian SMEs m-commerce adoption: TAM 3, UTAUT 2 and TOE approach. *Journal of Science and Technology Policy Management, 14*(1), 98–126. https://doi.org/10.1108/JSTPM-06-2019-0060

Sila, I. (2013). Factors affecting the adoption of B2B e-commerce technologies. *Electronic Commerce Research, 13*(2), 199–236. https://doi.org/10.1007/s10660-013-9110-7

Sudrajad, A. I., Tricahyono, D., Al-Amin, Zuwardi, Yulianti, E. B., Irnayenti, Ahmad, & Rosmawati, W. (2023). The role of digitalization performance on digital business strategy in Indonesia MSEMs. *International Journal of Professional Business Review, 8*(6), e02260. https://doi.org/10.26668/businessreview/2023.v8i6.2260

Sugiyono, D. (2013). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif dan R&D.* Alfabeta.

Sutrisman, J., & Pangaribuan, A. (2022). *Laporan kinerja proyek (Feasibility Study) Smart Sales & Distribution System (Smart PBF)*. Unpublished report.

Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (1990). *The processes of technological innovation*. Lexington Books.

Upadhyaya, P., Mohan, P., & Karantha, M. P. (2017). Determinants of B2B e-marketplace adoption: An empirical study of Indian small firms. *International Journal of E-Business Research, 13*(4), 55–69. https://doi.org/10.4018/IJEBR.2017100104

Van Huy, L., Rowe, F., Truex, D., & Huynh, M. Q. (2012). An empirical study of determinants of e-commerce adoption in SMEs in Vietnam. *Journal of Global Information Management, 20*(3), 23–54. https://doi.org/10.4018/jgim.2012070102

Wahyuningtyas, R., Disastra, G., & Rismayani, R. (2023). Toward cooperative competitiveness for community development in Economic Society 5.0. *Journal of Enterprising Communities, 17*(3), 594–620. https://doi.org/10.1108/JEC-10-2021-0149

Walker, J. H., Saffu, K., & Mazurek, M. (2016). An empirical study of factors influencing e-commerce adoption/non-adoption in Slovakian SMEs. *Journal of Internet Commerce, 15*(3), 189–213. https://doi.org/10.1080/15332861.2016.1191049

Zheng, D., Chen, J., Huang, L., & Zhang, C. (2013). E-government adoption in public administration organizations: Integrating institutional theory perspective and resource-based view. *European Journal of Information Systems, 22*(2), 221–234. https://doi.org/10.1057/ejis.2012.28

Zhu, K., & Kraemer, K. L. (2005). Post-adoption variations in usage and value of e-business by organizations: Cross-country evidence from the retail industry. *Information Systems Research, 16*(1), 61–84. https://doi.org/10.1287/isre.1050.0045