Reputation System as a Digital Socio-Economic Institution: Willingness to Sell in Online Markets

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Abstract:

This study examines the features and big data consisting of digital trace records from economic actions within Bukalapak's reputation system and their impact on the willingness to sell (WTS) electronic products. Digital mixed content analysis was used to analyze the rapidly evolving digital-social-based economic institution infrastructure. Data were collected, analyzed, and visualized using Python and analyzed using the concepts of new economic institutions and WTS. The findings indicate that the reputation system is a formal element comprising algorithms, rules, scripts, and patterns. This system facilitates social processes through feedback mechanisms in product descriptions, comments, reviews, ratings, and badges, which generate informal elements such as norms, trust, and symbolic values. These two elements are interconnected into an institutional framework whose function is to ensure that the market, characterized by high levels of anonymous transactions, uncertainty, and asymmetric information, can remain stable and meet the expectations of the actors involved.

Keywords: *Bukalapak, Python, social infrastructure, informal element, formal element, mixed content analysis.*

INTRODUCTION

Online marketplaces have emerged as one of the biggest success stories of the internet over the past two decades (Tadelis, 2016). Research by Google, Temasek, and Bain & Company, as cited by Annur (2022), indicates that the economic value of the e-commerce sector in Indonesia, including online marketplaces, increased by 22% in 2022 compared to the previous year. This significant growth brought the total value to US$48 billion. Furthermore, projections show a continuing upward trend until 2025, with an estimated value potentially reaching US$95 billion. This figure underscores the substantial and sustained growth of the e-commerce industry in Indonesia.

This increase is driven by the rapid development of the middle class and easy internet access, which accounts for more than 45% of the market value of online marketplaces in Southeast Asia. Specifically, sales of electronic products have surged since the Covid-19 pandemic. Albert Fleming, General Manager of Home Appliances Polytron, confirmed the increase in sales in online marketplaces but a decrease in conventional markets (Irham, 2021). This shift reflects significant changes in consumer behavior and business adaptation due to complex economic and social factors.

Online marketplaces provide sellers with comprehensive data on buyer behavior, preferences, and market trends, helping to understand demand despite initial data limitations (Ghoshal et al., 2020). Conversely, Han and Kim (2017) identified several risks faced by buyers, including financial risk, privacy, limited product access, transaction security, social/psychological assurance, and time. This unique economic scenario sees transaction values increasing despite the significant potential for asymmetric information and risk. Transactions occur

anonymously between entities that have never met (Ba & Pavlou, 2002). Therefore, it is assumed that online marketplace mechanisms effectively assure successful transactions, facilitating buying and selling.

Ba and Pavlou (2002) used the term 'institution-based trust' to refer to the trust system created by buyers' perceptions of the effectiveness of third-party institutional mechanisms in facilitating successful transactions. To ensure the smooth functioning of the marketplace, both sellers and buyers need protection mechanisms to mitigate problems arising from asymmetric information. These mechanisms include return policies, secure payment systems, and seller verification (Tadelis, 2016). Thus, in the context of online marketplaces, feedback and reputation systems are crucial for building trust between sellers and buyers. Tadelis (2016) suggests that, like conventional markets, the reputation of sellers and reviews from previous buyers are essential for attracting more buyers and ensuring successful transactions.

As in conventional market transactions, trust is also important in online marketplaces due to their impersonal nature (Ba et al., 2003). Furthermore, online marketplaces provide reputation systems to reduce the number of fraudulent transactions and ensure secure transactions. As mentioned by Li et al. (2020), a good seller reputation accumulated from buyer feedback in the reputation system is crucial for building trust in online marketplace transactions. Dellarocas and Wood (2008) claim that this system helps buyers feel comfortable when conducting anonymous transactions.

The difference between these markets is evident, especially online, where digital footprints create accessible reputations for buyers and sellers, defined by Fauzi et al. (2023) as measurable digital social relationships recorded by platform algorithms. Fauzi et al. (2023) explain that digital footprints, which include store and product reputations and trust, are more easily accessible compared to conventional market reputations, which rely on limited access and interpersonal relationships among market participants. Therefore, the dynamics of online marketplaces can influence certain economic behavior patterns through platforms, especially for sellers regarding their trust in selling products anonymously.

Various previous studies, as cited by Resnick et al. (2000), concluded that the success of online marketplaces depends on these reputation systems, which are the central market arena where sellers and buyers can interact. These studies reveal a shift from conventional markets focusing on physical arenas for interaction. Therefore, these reputation systems are associated with two aspects: first, a stronger reputation indicates a better seller's ability to attract diverse buyers and set higher prices for the transacted goods (Bar-Isaac & Tadelis, 2008). Second, if a seller's reputation increases or decreases, the company's transactions and growth can increase or decrease.

Although various conclusions state their success, the role of reputation systems is often perceived only as a technical algorithmic tool separated from its social context. From the previous explanation, this system is positioned as a finished product to generate trust, ignoring an in-depth analysis of the social process of trust formation through institutional relationships in the context of a mediated, anonymous, always accessible market arena characterized by many-to-many rather than one-to-one interactions (Thompson, 2020).

Additionally, some previous studies have discussed the role of institutions in online marketplaces in regulating economic behavior and successful anonymous transactions. Pavlou and Gefen (2004) analyzed the concept of 'institution-based trust' and found that effective institutional mechanisms can build trust in both well-known and unknown sellers. Lu et al. (2016) also found that effective institutional structures and social presence in social e-commerce can enhance trust in anonymous transactions. Fang et al. (2014) explored the effectiveness of e-commerce institutional mechanisms in encouraging repeat purchases, finding that positive previous transaction experiences greatly influence trust and repeat purchase decisions.

However, these studies tend to view online market institutions as merely technical aspects without fully elaborating on the social interaction processes mediated by the internet. Sänger and Pernul (2018) criticized reputation systems that can be manipulated and introduced the concept of interactive reputation systems involving users in assessing reputation, thus enhancing the ability to detect inconsistent behavior.

Moreover, the perspective of sellers regarding their willingness to sell (WTS) in online marketplaces and the need for these systems to generate trust is still underexplored. This study thus focuses on the WTS of electronic product sellers on Bukalapak, one of the largest online marketplace platforms in Indonesia and the subject of this research. Fauzi et al. (2023) state that this platform receives approximately 23,096,700 visits or users per month and has the highest number of installations on the Play Store.

This study applies the term new economic institutionalism as an analytical tool to explain the relationship between formal elements—technical in nature—and informal elements—social. These two elements are positioned in an interconnected and inseparable relationship, providing a more realistic explanation of actor behavior rationality in the economic and organizational context, specifically regarding the WTS of electronic products on Bukalapak. Therefore, this study develops two research questions: How are digital economic institutions formed through

intersubjective relationships between actors in online marketplaces? And how does the significance of digital-economic institutions affect WTS in Bukalapak?

METHOD

This research employs mixed digital content analysis as developed by Punziano et al. (2023), an approach and research strategy that utilizes data from digital environments to study social and cultural changes (Caliandro & Gandini, 2016; Punziano et al., 2023; Rogers, 2009). This study fully utilizes big data, similar to the research by Fauzi et al. (2023), from the digital footprints of electronic product transactions on Bukalapak. Hesse-Biber and Johnson (2013) argue that the rapid growth of big data today can drive mixed-methods research to transform 'traditional' approaches to data collection and analysis. In this regard, Punziano et al. (2023) emphasize the need for new applications, software, and algorithms "that enable the extraction of knowledge embedded in digital data," namely Python.

Content analysis, as illustrated by Punziano et al. (2023), encompasses almost all techniques used to extract secondary meaning from information, allowing researchers to uncover and test nuances of behavior, perceptions, and trends (Brown, 2005). Krippendorff (2018) divides content analysis into three definitions: First, content is inherent in the text, so the focus of analysis is on elements within the text and how specific messages and meanings are derived. Second, content is a characteristic or attribute of the text source, highlighting the relationship between specific characteristics of the text source and the content or message conveyed. Third, content emerges during the process of text analysis relative to context, potentially developing from the interaction between the researcher and the text being analyzed.

Furthermore, content analysis is a research technique for drawing replicable and valid interpretations or inferences from texts (or other meaningful material) in relation to their context of use (Krippendorff, 2018). In this regard, this research addresses the challenges presented by Punziano et al. (2023) regarding studies aiming to extract meaning and nuances, in addition to trends, in both quantitative and qualitative ways. Thus, this digital-based study seeks to understand not only what happens in terms of quantity and quality but also the meaning of the data collected. Therefore, further analysis is required to understand the implications, significance, and context of the findings.

Figure 1: Analysis and Operationalization of Methodology

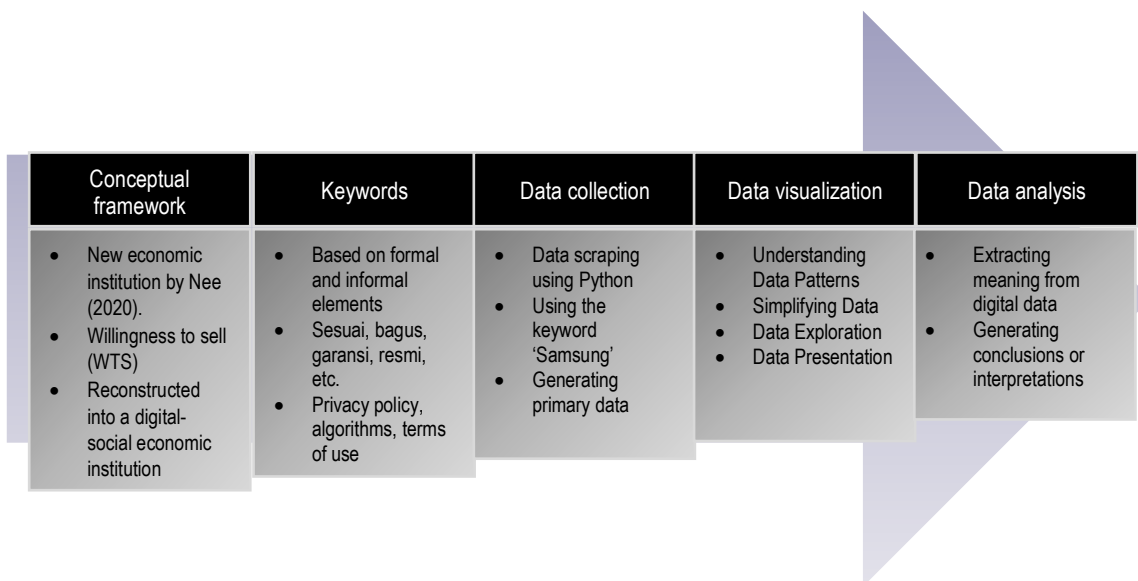| Conceptual framework	Keywords	Data collection	Data visualization	Data analysis
• New economic institution by Nee (2020). • Willingness to sell (WTS) • Reconstructed into a digital-social economic institution	• Based on formal and informal elements • Sesuai, bagus, garansi, resmi, etc. • Privacy policy, algorithms, terms of use	• Data scraping using Python • Using the keyword 'Samsung' • Generating primary data	• Understanding Data Patterns • Simplifying Data • Data Exploration • Data Presentation	• Extracting meaning from digital data • Generating conclusions or interpretations

Figure 1 illustrates the stages of utilizing the conceptual framework as a basis for analyzing big data and revealing the role of the conceptual framework in guiding the technical research process, which includes data

collection, processing, and analysis. In this context, the concept of new institutionalism serves as the foundation for the analysis and interpretation stages of big data to elaborate on a new model of economic institutions through social-digital interactions in the online market reputation system. Subsequently, the analysis and interpretation of these institutions are linked to the concept of WTS to offer a more comprehensive explanation of the significance of formal and informal elements as institutional frameworks in the digital arena, emerging through the collective actions of actors in pursuing interests.

These two concepts are used as key determinants in the analysis stage to uncover emerging meanings and nuances in the texts, images, and big data collected from the reputation system and other digital institutions owned by Bukalapak. The analysis results are then used to describe the formal and informal elements of institutions in the context of the online market. This point becomes the focus of analyzing the social-digital structure and the collective actions of market actors aimed at reinforcing the form and role of digital-economic institutions and their significance in influencing the WTS of electronic products.

After analyzing the empirical situation, Samsung brand electronic products were chosen in the next stage as a commodity model to examine economic behavior patterns. The keyword 'Samsung' was selected to extract data using scraping techniques with the Python programming language. As previously mentioned, Samsung products can be categorized as goods 'vulnerable' to transaction failures, either because the goods are received in damaged condition, or the buyer becomes a victim of fraud due to their relatively high economic value.

The big data collected through scraping techniques is primary data because, as referenced by Baral (2017), it is gathered by the author directly from the source, in this case, Bukalapak. Hox and Boeije (2005) also explain that big data is collected with the aim of analyzing specific phenomena using the procedures best suited to the research problem.

The visualization of big data aims to simplify understanding and analysis through graphs or charts. In today's information age, according to Börner et al. (2019), creating and reading data visualizations is as crucial as literacy. This stage explains transactions and interactions in the online market, transforming complex scraping data into clear graphs for easier interpretation. The final step, data interpretation, extracts insights from Bukalapak's visual data using the established framework and research methods. This abstracts from real-world scenarios to reveal conceptual innovations, turning visual data into deep, conceptually relevant understanding in line with the research objectives and framework.

RESULTS AND DISCUSSION

Social Processes and Economic Institutions

In the field of economic sociology, Nee (2010) highlights the growing interest of economists in studying social institutions as an inevitable part of social processes in society. To understand institutions, it is necessary to integrate sociological variables such as shared beliefs, norms, and social relations "... to understand the motivations behind adherence to rules" (Nee, 2010). Consequently, there has been a shift in economic research, requiring researchers to consider broader social aspects to study complex institutional phenomena.

This situation implies the need for a new analytical framework that can unify both perspectives: the general understanding in economic studies that institutions are 'constraints' created by individuals and the sociological view that institutions are social facts external to individuals (Nee, 2010). Furthermore, Nee (2010) introduces two distinct poles. On the one hand, new organizational institutionalists focus on the dissemination of rules, scripts, and models to observe their influence on individual behavior in an economic context. On the other hand, new institutional economists propose game theory models concerning endogenous motivations, the driving factors of individual actions originating from shared beliefs and norms. This analytical framework is necessary to understand the role of institutions in a broader context.

Nee (2010) proposes a new conceptual framework known as new institutional economic sociology to gain a sociological perspective that emphasizes the causal relationship of social structures. Nee (2010) also highlights that institutions are not just formal-informal constraints that determine the 'incentive structure' (Galenson, 1983). Essentially, institutions involve actors, both individuals and organizations, who pursue real interests within a concrete institutional structure and actively shape and operate these institutions (Nee, 2010). Economic institutions are further defined as dominant systems of interconnected informal and formal elements that act as preferences for economic actors in their actions "as they pursue their interests" (Nee, 2010). In this regard, Nee (2010) refers to institutions as social structures that perform collective actions by facilitating and organizing the interests of economic actors 'and enforcing principal-agent relationships.'

Thus, Nee's (2010) perspective on institutions can be described as a dominant system comprising two interconnected elements, formal and informal. Market actors, both individuals and organizations, use these institutions as guidelines to direct their actions as they pursue their interests in the market. This aligns with Granovetter (1985), who posits that institutions are crucial for shaping economic behavior, where social interactions in conventional market arenas become the focal point for forming formal and informal economic elements.

As mentioned by Fauzi et al. (2023), 'social interactions' in conventional markets also occur in online markets. Therefore, the analysis of the willingness to sell (WTS) in online markets also needs to focus on social-digital interactions that occur within the reputation system, where the internet mediates social interactions. Given the perspective that actors' actions are not passively or rigidly compliant with the scripts written for them (Granovetter, 1985), Nee (2010) develops the perspective of new institutional economic sociology. In this perspective, the rationality of actors in economic actions is situated with reference to institutional elements, such as customs, networks, norms, cultural beliefs, and institutional arrangements.

This perspective emphasizes the causal relationship between institutions and social structures (Nee, 2010). Therefore, institutions are not limited to formal entities, such as government institutions or business organizations, but also include informal entities, including norms, which are unofficial rules that can facilitate, motivate, and regulate collective actions among group members. Furthermore, Nee (2010) states that these norms emerge from problem-solving efforts by economic actors, which then become practical rules for expected behavior.

As a conceptual innovation, the concept of new institutional economic sociology, rooted in conventional markets, is used to explain phenomena, borrowing terms from Fauzi et al. (2023) in the arena of social-digital interactions between economic actors. Such an arena may include product descriptions, comments, reviews, and ratings, collectively known as a reputation system, which is anonymously shaped and mediated by the internet and can be accessed indefinitely. This concept allows the author to examine how the principles of economic sociology and institutional analysis can be applied in the new context of market behavior influenced by algorithms in shaping the informal and formal elements of institutions, also referred to as socio-digital economic institutions.

Willingness to Sell Electronic Products Based on Social-Digital Institutions

Scraping using Python with the keyword "Samsung" in the Android phone category on Bukalapak resulted in 662 product IDs, which are unique codes for each type of product sold by sellers on Bukalapak. The transaction data obtained from these hundreds of IDs includes a total of 38,744 products sold with a transaction value of IDR 104,464,217,000 (one hundred and four billion four hundred sixty-four million two hundred seventeen thousand rupiahs). The transaction data, namely the total products sold and their selling prices, is presented in Figure 2.

Figure 2: Samsung Product Transaction Graph on Bukalapak
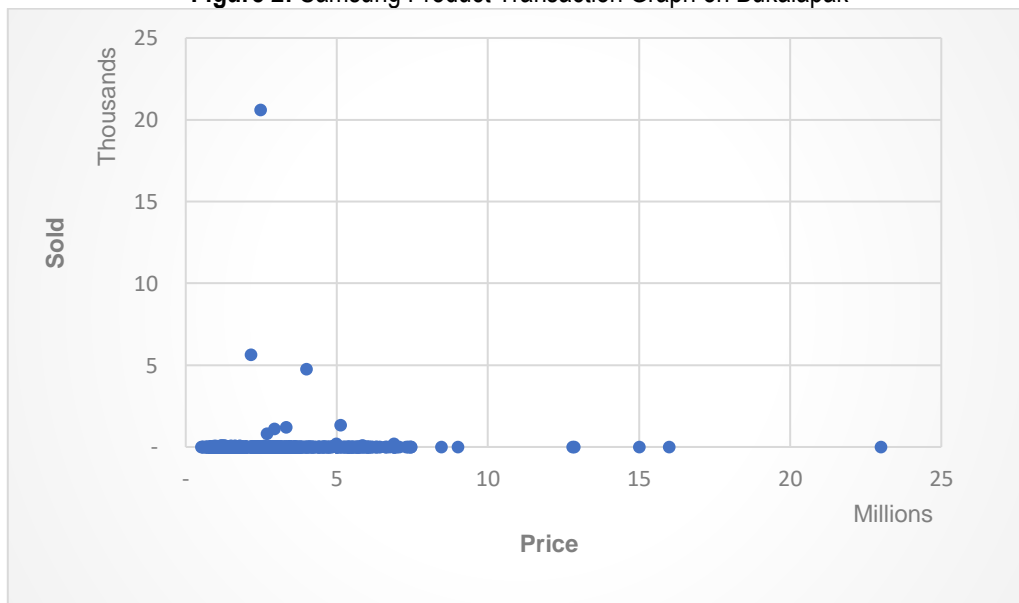
The notable figures indicate a strong willingness to sell (WTS) in the anonymous market. Therefore, it is crucial to examine the digital incentive structure—a framework shaped by digitally mediated interactions and the reputation system, along with formal regulations through algorithms. These factors influence the economic behavior of sellers, buyers, and Bukalapak users. Moreover, this incentive structure is generated not only through formal elements, such as privacy policies or security guidelines but also through informal elements resulting from social-digital construction processes, as mentioned by Fauzi et al. (2023).

Thus, digital economic institutions encompass formal and informal constraints, along with the involvement of individuals and organizations in the interactions between sellers, buyers, and app users. This framework, according to Nee (2010), facilitates collective action and builds trust in successful and secure transactions. Figure 3 displays the ten best-selling products, highlighting the volume of transactions and the formation of trust within the incentive structure. This structure, comprising both formal and informal elements, drives the success of anonymous sales.

Figure 3: Top Ten Best-Selling Product IDs
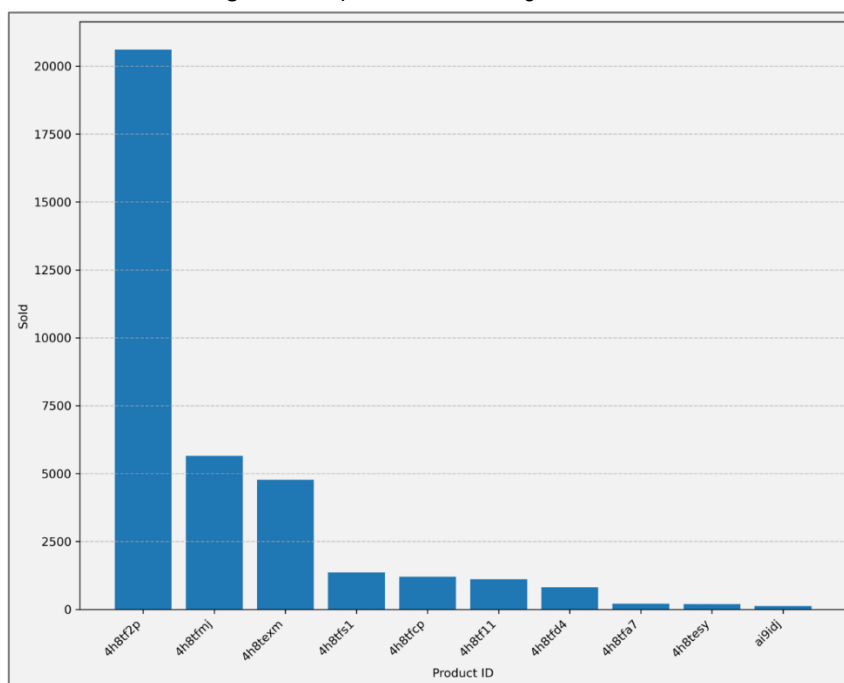
The analysis shows that Rdj_cell dominates the top nine sales positions, with a total of 35,714 transactions, while Gojap is in tenth place with 196 sales. This highlights the importance of studying the institutional digital framework built by these two stores. Their success indicates effective business strategies or other factors driving market dominance. Therefore, it is crucial to analyze how Rdj_cell utilizes formal and informal elements in the digital economic institution to achieve high sales.

This framework is also essential to examine in the context of implementing a dominant system consisting of interconnected informal and formal elements, as proposed by Nee (2010), as part of the cause-and-effect relationship of the social structure. In both conventional and online markets, this causal relationship manifests and can be observed in the digital footprints within the reputation system. Figure 4 illustrates the frequency of dominant words in the product comment sections, showcasing the informal elements of the digital economic institution.

Figure 4: Donut Chart of Word Frequency in Product Comment Sections
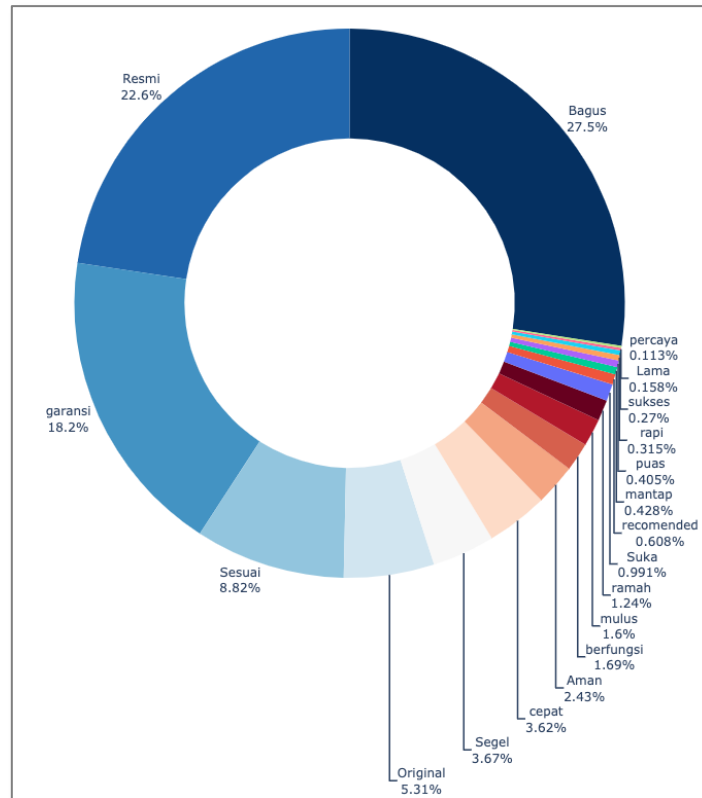
As shown in Figure 3, there are 20 words that most frequently appear in the comment sections, each carrying nuances and perceptions from the buyers' perspective, which are crucial for the sustainability of the online market. This is because word frequency represents a form of economic behavior derived from a combination of informal and formal elements of the online market (Nee, 2010).

Unlike conventional markets, which build trust through repeated interactions, word-of-mouth, and product samples (Hallikainen & Laukkanen, 2018), online markets rely on the accumulation of these word frequencies as a tool for building trust due to the greater spatial and social distance between transaction partners, partial anonymity, reduced legal oversight, and the absence of face-to-face social interactions (Hallikainen & Laukkanen, 2018). Therefore, feedback in the comment sections can be considered a rational action within the framework of social interaction, which can determine economic behavior.

The frequently used words reflect consumers' understanding and interpretation of the products purchased, encompassing aspects such as quality, customer service, shopping experience, and other factors influencing purchases. As mentioned by Pavlou and Dimoka (2006), the text in these various comments is highly valuable for providing information about previous transactions that simple numerical data cannot fully capture.

Moreover, this accumulation reflects buyers' subjective interpretations when assessing product quality (Beckert, 2020) and can be referred to as the process of forming symbolic value due to meanings and nuances that are not materially inherent in the product. The frequent use of words, such as 'good' at 27.5%, enhances the symbolic value of the product. Other positive words also increase buyers' trust in the product's quality and the success of the transaction. This mechanism helps sellers understand buyers' perceptions, strengthening trust in the online market. It is not just an algorithm but embodies intersubjective relationships between sellers and buyers.

Figure 5: Profile of Sellers with Super Seller and Recommended Seller Badges on Bukalapak
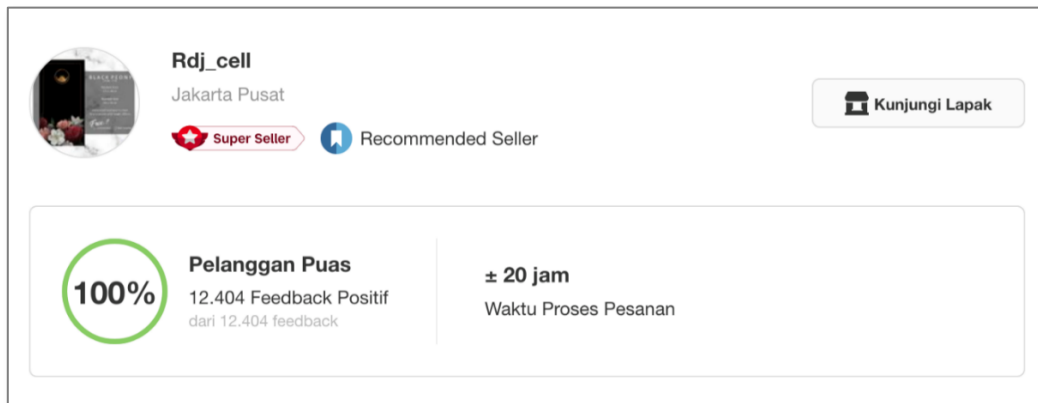

Figure 5 is the profile page of a seller who has successfully sold the highest number of Samsung products on the Bukalapak platform. This seller has earned complete badges, namely Super Seller and Recommended Seller. These badges are digital institutions because they are generated through algorithms, can be accessed without limits, recorded in the reputation system, and depict a system consisting of formal elements, such as rules regarding high sales criteria, seller performance, positive feedback, good reputation, and quick response to customers.

Based on this mechanism, these badges are crucial for sellers to gain customer trust and exclusive facilities from Bukalapak, such as promotional vouchers to attract more customers. Essentially, these badges can increase willingness and motivate sellers to achieve higher standards in sales and service. Furthermore, these badges not only serve as markers of individual achievement but also impact the organizational dynamics of the economy within Bukalapak's ecosystem as an online marketplace platform.

These badges indicate that the seller meets certain criteria, enhancing customer trust in their quality and reputation. Customers feel safer buying from sellers displaying the Super Seller and Recommended Seller badges. This highlights the role of badges in motivating sellers and building trust within the Bukalapak ecosystem. It is a prime example of how digital economic institutions shape online market behavior through formal and informal elements.

Collective Action and the Formation of Digital Economic Institutions

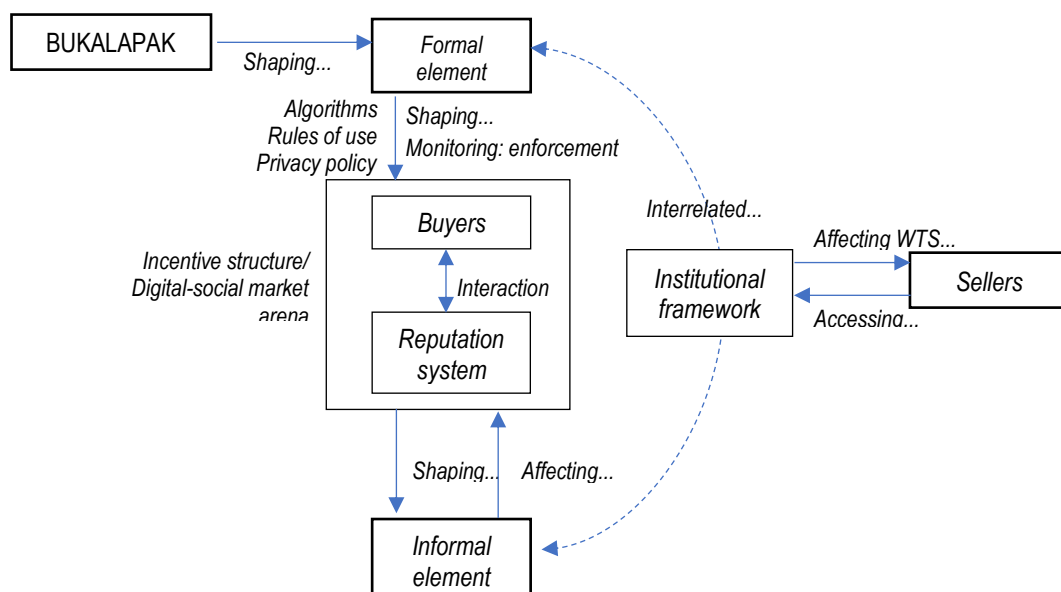**Figure 6:** Digital Economic Institution Model

Figure 6 illustrates how Bukalapak, as a marketplace platform, plays a dominant role in shaping digital economic institutions. This model also presents an analytical layer where the factors explaining economic phenomena are not singular. In this context, the institutional framework, consisting of formal and informal elements, interrelates and influences the formation of the digital-economic institutional framework, which in turn affects sellers' rational actions as a means to pursue market interests. In conclusion, digital-economic institutions are shaped not only by rules, scripts, and patterns, as discussed by Meyer & Rowan (1977), but solely by cultural beliefs and social norms, as explained by Greif (1994).

Referring to the data above, it is important to observe Bukalapak's role not merely as an application with a set of technical tools to support the buying and selling of commodities. Bukalapak also acts as a dominant system or institutional framework, as mentioned by Nee (2010), which provides and controls anonymous collective actions among online market participants. This system is formed through algorithms, usage rules, and application privacy policies, identified as formal elements by Nee (2010).

This dominant role indicates that Bukalapak has a significant influence in regulating and controlling interactions among economic actors in the online market. This aligns with the new institutionalism perspective in economic sociology, where institutions are emphasized to have a significant role in regulating economic behavior. This behavior includes digital interactions among market participants, which are recorded and subsequently create informal elements. This forms the basis of the argument, as previously explained that this platform functions not only as a technical tool for online commodity exchange but also as a determinant of market dynamics.

Simply put, referring to Nee (2010), market regulation by the state can directly shape social structures in conventional markets, which can form the basis of a sustainable institutional environment. Online markets are slightly different because market regulation by the state does not directly shape social structures. This is because the application of 'constraints' on the digital-social structure is done through algorithms that regulate how the market can operate. Nonetheless, such regulation plays a similar role in both types of markets in defining the incentive structure for sellers in terms of economic interests and for 'organizations' in the context of interests among participants in the online market.

It is clear that Bukalapak's substantial role in this collective action mechanism is an effort to become the market itself, aiming to control activities and generate exchange rules, "which may lead to the formation of a proprietary online market" (Fauzi et al., 2023). This is because Bukalapak can encompass all aspects of the market system, including policies, features, and algorithms. In other words, Bukalapak can directly and actively shape, monitor, regulate, and influence how participants on the platform interact, transact, and generate reputations recorded in digital footprints and become part of the informal elements in the online market.

Furthermore, these activities are controlled in the digital-social marketplace arena where collective actions and social interactions occur anonymously and are mediated, characterized by many-to-many interactions rather than one-to-one (Thompson, 2020). These actions and interactions occur in the reputation system, which consists of product descriptions, comment sections, review buttons, ratings, super seller badges, and recommended seller badges. As it functions as an arena for actions and interactions, this reputation system plays a vital role in shaping informal elements, which can include shared beliefs, perspectives, or views adopted by economic actors and norms as 'guidelines' directing individual or group behavior in various situations.

As part of the informal elements, norms can coordinate the activities of market participants, for example, in determining whether a product, based on accumulated feedback, has a high level of trust and safety and is worthy of purchase (Nee, 2010). This trust is crucial in transaction-based markets characterized by anonymity (Fauzi et al., 2023), acting as symbolic value to reduce uncertainty and increase buyers' willingness to purchase (Beckert, 2020). Moreover, Bukalapak's position as a digitally created trust mechanism, according to transaction data, is one of the incentives for sellers to confidently sell their products anonymously. This means that norms recorded in digital footprints can serve as a guarantee of the collective interests of market participants, ensuring that they act in line with their expectations and interests.

In addition to building informal elements, the reputation system also influences the social patterns and substance of the digital-social marketplace arena, defined by Fauzi et al. (2023) as pre-existing digital-social ties or records of digital-social activity in the online market-social arena. As a result, this reputation system can act as a provider of incentives and punishments in facilitating, motivating, and regulating trustworthy behavior and avoiding

opportunism regarding group norms (Nee, 2010), highly related to symbolic values, namely trust and confidence formed through digital-social constructions, as presented in the earlier keyword visualization. Clearly, this system can establish and maintain compliance with norms, "which is crucial for online transactions" (Hallikainen & Laukkanen, 2018).

According to Nee (2010), norms as informal rules can facilitate, motivate, and regulate collective actions among groups that are not actually interconnected. In the context of online markets, norms can be embodied in the symbolic value of 'trust,' substantial and built by buyer feedback in the reputation system. This is highly valuable as buyers can easily access it anytime and use it as a reference to determine whether a product is worth purchasing based on previous buyers' experiences. It can be said that norms emerge as a result of individual problem-solving activities and serve as guidelines to achieve expected behavior (Nee, 2010).

Similarly, these norms have successfully coordinated groups to enhance opportunities for success—achievement of rewards—through cooperation (Nee, 2010), which can have negative or positive nuances in the context of online markets. Negative nuances arise if comments with negative words dominate feedback, for example, 'product not as described' or 'slow delivery.' Conversely, positive nuances arise if feedback is dominated by words indicating satisfaction or good service, for example, 'authentic item' or 'neat packaging,' as shown in Figure 4. In this case, norms in the online market are highly dynamic, continuously adjusting to changes in transaction volume and feedback accumulated from buyers.

Nee (2010) states that these norms can influence the 'cost' of supervision and encourage compliance with formal rules. This is because these norms are formed through relationships between individuals in the reputation system, making them more personal or informally formed through social structures. Furthermore, these norms have a different function from deviation prevention system techniques, such as credit cards or telecommunication electronic trading systems (Abdallah et al., 2016).

Therefore, the analysis of formal and informal elements confirms Nee's (2010) idea of two functioning mechanisms from micro to macro levels and vice versa, thus inseparable from each other. At this point, a perspective prioritizing multi-level social relationships in explaining institutional frameworks and economic behavior surpasses Granovetter's (1985) perspective, which emphasizes ties in the context of social networks. In this case, the micro level consists of digital-social interactions in the reputation system driven by the desire to purchase electronic products from trusted sellers. Meanwhile, the macro level consists of regulations created by application developers, algorithmic mechanisms to regulate transaction activities in the online market, and collective actions of all market participants. The formation of these two institutional levels is crucial for sellers to have confidence that the platform has successfully provided a trustworthy market arena and facilitates transactions in a safe and certain manner.

CONCLUSION

Platform developers establish the reputation system through algorithms, rules, scripts, and patterns. This system can be described as a formal element of the digital economic institution, which is digital, flexible, and operates according to algorithmic mechanisms. Furthermore, this system is also the primary social arena for online markets, enabling the social market process to occur within the context of rational actions among economic actors in pursuit of their interests. This social arena consists of feedback manifested in product descriptions, comments, reviews, ratings, badges, or buyers' efforts to access reputations that contain the symbolic value of trust.

It is asserted that this system plays a crucial role in forming informal elements in the online market, which consist of norms and trust as well as non-algorithmic rules that facilitate, motivate, and regulate collective actions among closely-knit group members (Nee, 2010), whose meanings and nuances can be accessed and acquired at any time by economic actors in the online market. Additionally, norms serve to shape shared beliefs regarding the safety of transactions, thus becoming guidelines for market actors in various situations. In relation to online markets, these guidelines are manifested in the role of informal 'supervision' in economic activities, thereby reducing the costs of formal supervision through the enforcement of technical rules from anonymous buying and selling transactions and uncertainties and increasing buyers' willingness to purchase (Beckert, 2020).

This role is very important in online markets. As stated by Nee (2010), it is common to encounter separation behavior in economic activities and market behaviors that deviate from the expected formal-informal rules in the economic system. This behavior is recognized when transactional behaviors contradict each other and hinder market order, as found by Tadelis (2016) on eBay or Taobao, where sellers manipulate sales numbers by buying their products or intentionally giving positive ratings. This issue aligns with the findings of Abraham et al., (2023), who assert that the reputation system is also a market arena where strategic problems often occur.

Thus, Bukalapak is not merely a 'technical tool' of a passive machine in online commodity exchanges but operates as an arena of digital social networks where individuals can interact, build reputations, and share experiences. Bukalapak can also be considered a dominant system that strives to become the market itself, aiming to control market activities and set exchange rules (Staab, 2019), thereby enabling it to create a property-like online market by controlling all aspects of the platform, such as policies, features, and algorithms. This is consistent with the perspective of new institutionalism in economic sociology that institutions play a significant role in regulating and influencing economic behavior.

The relationship between formal and informal elements is reciprocal, as an institutional framework with a significant influence on buyers and sellers, where the algorithms, rules, and formal policies in place at Bukalapak can influence how informal norms are formed, developed, and evolved. Meanwhile, the norms and shared beliefs formed in the digital traces can also influence the policies and features set by Bukalapak. Therefore, these two forms of elements, representing the micro and macro levels of market social structures, have characteristics of unlimited access, measurability, and being recorded in digital social ties, influencing the incentive structures for sellers and organizations in the online market.

Furthermore, data collected through the scraping process reveals that a seller named Rdj_cell has successfully made massive sales of Samsung products (99.36%), thus dominating the electronics market under the Samsung brand in Bukalapak. In-depth analysis shows that this store has a complete digital institutional infrastructure, which not only consists of a large number of comments, ratings, and product descriptions—indicating that the nuances and meanings of the symbolic value of Rdj_cell are quite strong—but also exclusive badges from Bukalapak, namely Super Seller and Recommended Seller, providing institutional advantages over other sellers.

These badges hold significant meaning for both sellers and buyers, indicating that the symbolic value of trust is non-material capital in online sales. By having these badges, Rdj_cell is better able to communicate its products to potential customers, allowing the meanings and nuances recorded in the reputation system and other features to be fully captured.

In conclusion, WTS by Rdj_cell in the online market is motivated by the features and guarantees offered by Bukalapak, both directly through algorithms and privacy policies and indirectly through symbolic values built into the reputation system through digital-social processes as digital social ties or big data, particularly in the comments column, ratings, and feedback from buyers. These two elements are crucial for realizing the digital economic, institutional infrastructure, ensuring that the market, characterized by high levels of anonymous transactions, uncertainty, and asymmetric information, can encourage positive behavior that reinforces trust and stabilizes expectations (Beckert, 2020; Fauzi et al., 2023).

While exploring the dynamics of digital economic institutions and the role of platforms like Bukalapak in shaping online market behavior, several limitations exist. This analysis primarily focuses on Bukalapak as a case study, potentially limiting generalizability. Future research should expand its scope to include multiple platforms for a more comprehensive understanding. Additionally, this study heavily relies on existing theoretical frameworks and literature, necessitating empirical validation. Surveys, interviews, or experiments with sellers and buyers could provide deeper insights into their perceptions and interactions within digital economic institutions. Moreover, this analysis primarily examines the seller's perspective, leaving room to explore the buyer's viewpoint. Understanding buyers' perceptions and behaviors in response to digital economic institutions is crucial for a holistic understanding of online market dynamics.

In the future, researchers should explore how digital economic institutions evolve amid technological advancements and regulatory changes. As online markets continue to evolve, understanding these institutions' adaptability and impact on market dynamics becomes increasingly important. In conclusion, while this study provides valuable insights, future research should further explore and validate theoretical propositions, offering practical implications for stakeholders in online markets.

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