# The Role of the AGROW Application in Encouraging Farmers' Economic Independence through Wider Market Access

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**Abstract.** This study examines the development and testing of AGROW, an agricultural marketing information system designed to enhance the marketing process for agricultural products. AGROW provides comprehensive features such as GrowMart, GrowPO, GrowNews, and GrowNect, catering to the needs of farmers, administrators, and buyers. Functionality tests demonstrate flawless performance, while usability tests report a high user satisfaction rate of 85%. AGROW successfully bridges market needs with innovative technology, improving operational efficiency and market access for agricultural products.Key recommendations include continuous system updates to stay aligned with technological advancements, enhancing data security protocols, offering regular training for farmers, and developing expansion strategies to reach national and international markets. Despite its success, AGROW faces limitations, such as expanding beyond local markets, addressing data security risks, overcoming technology adoption challenges, and dealing with limited internet access in rural areas.

**Keywords:** AGROW, agricultural marketing, digital solutions, functionality, usability, farmers, market access.

## 1 Introduction

Agriculture is a vital sector that serves as the backbone of many countries' economies, especially in terms of sustaining rural communities and fulfilling global food needs [1]. The role of agriculture is not limited to food production but also contributes significantly to improving the welfare of rural communities, reducing poverty, and strengthening national economic resilience [2]. However, despite its crucial role, the agricultural sector still faces various challenges, one of which is the limited market access for farmers. This condition becomes a major obstacle to promoting farmers' economic independence, often trapping them in a cycle of poverty that is difficult to break [3].

Limited access to markets is one of the fundamental problems in the development of the agricultural sector in rural areas [4]. Although this sector is at the core of village life and serves as the primary source of livelihood, its potential to improve farmers' welfare remains far from

expectations. Farmers often struggle to access broader markets, resulting in their agricultural products receiving uncompetitive prices [5]. This directly impacts farmers' income, which remains low and affects the overall economic condition of rural areas. Therefore, efforts are needed to expand market access and improve the efficiency of agricultural product marketing to create a positive impact on farmers' welfare.

The development of the agricultural sector also requires support from conducive policies. In recent years, there has been a growing need to develop new strategies that utilize technology to improve farmers' market access. One innovation that has garnered attention is the use of information technology-based applications that can help farmers overcome obstacles in marketing their products [6]. AGROW, as one example of technological innovation, offers a solution in facilitating wider market access for farmers by utilizing digital networks. Therefore, the role of technology in the agricultural sector not only enhances production efficiency but also opens new market opportunities for farmers, ultimately boosting their economic independence [7].

This research aims to provide a deeper understanding of how the AGROW application can contribute to promoting farmers' economic independence by improving market access. The study seeks to identify the main barriers faced by farmers in accessing markets and to analyze the extent to which AGROW can offer solutions to these challenges. Additionally, this research aims to assess the impact of the AGROW application on farmers' economic independence, particularly in the context of increasing income and reducing poverty in rural areas.

The urgency of this research is significant, considering that farmers' economic independence is a key factor in economic development, both at the local and national levels. By providing wider market access, not only will farmers' income increase, but it will also contribute to poverty reduction in rural areas, which have long been poverty pockets in many countries [8]. Moreover, technological innovations like the AGROW application offer tremendous potential to shift paradigms in the agricultural system, making the sector more productive and efficient.

The findings from this research are expected to make a significant contribution to the advancement of knowledge, particularly in the fields of agriculture and information technology. By studying the role of the AGROW application in the context of agriculture and farmers' economy, this research will open new insights into the integration of technology in the agricultural sector and its impact on economic development and the welfare of rural communities. Furthermore, the results of this research are also expected to serve as a basis for future studies in this field and provide valuable input for policymakers in efforts to improve farmers' welfare and strengthen global food security.

## 2 Literature Review

### 2.1. Digital Transformation

Westerman et al. explain that digital transformation refers to the use of technology with the goal of radically improving a company's performance and reach, transforming relationships with customers, internal processes, and value propositions [9]. Meanwhile, Vial defines digital transformation as a process aimed at enhancing a particular organization by generating significant changes in its characteristics through the integration of information technology,

computing, communication, and connectivity [10]. Morakanyane et al.describe digital transformation as an evolutionary process that uses digital technology to enable changes in business models, operational processes, and customer experiences, with the goal of creating value [11]. Vial further explains that digital transformation is not merely a technological phenomenon but also has multidimensional impacts on society, politics, and the economy [10].

From this review, it can be concluded that digital transformation is an evolutionary process aimed at improving a company's performance and reach by leveraging digital technology. This definition includes significant changes in customer relationships, internal processes, value propositions, and the development of new business models. Digital transformation is not limited to technological aspects but also has a broad impact on society, politics, and the economy. Therefore, organizations need to respond to these changes with adaptive strategies to leverage the potential of digital technology in creating value and maintaining competitiveness in an increasingly dynamic market. Thus, digital transformation becomes key to maintaining organizational relevance and sustainability in today's digital era.

## 2.2. Mobile Applications

According to Chang (2015, in Ailie), a mobile application is software or an application used to perform specific tasks or functions for users, and it can run on various mobile devices, including electronic devices, phones, and smartphones [12]. However, Hsu and Lin define mobile applications as mobile software used for general productivity and information retrieval, ranging from contact management, calendars, to weather information searches, as well as other categories such as games, social networking platforms, and more [13]. Mobile software is designed to support a variety of functional tasks on smartphones, tablet computers, and other personal mobile devices [12].

The comparison of these definitions shows that mobile applications have a broad meaning, ranging from those focused on specific tasks to those aimed at enhancing general productivity and providing diverse information access. This underscores the importance of having a comprehensive understanding of the role and function of mobile applications in various contexts and highlights the need for inclusive definitions to support further study, practice, and research in the field of mobile technology.

## 2.3. Marketing

According to the American Marketing Association, marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large [14]. Marketing is a managerial process and activity aimed at meeting the needs of individuals or groups by offering and exchanging products or services that have value to others [15]. According to Laksana, marketing can be understood as the meeting between sellers and buyers to conduct transactions for products or services [16]. Kotler and Keller state that marketing is about identifying and meeting human and social needs. One of the best definitions of marketing is fulfilling needs while generating profit [17]. Meanwhile, Tjiptono and Diana describe marketing as a process that involves creating, distributing, promoting, and pricing goods, services, and ideas, with the goal of facilitating satisfying exchanges with customers and building and maintaining positive relationships with stakeholders in a dynamic environment [18].

From the various approaches and definitions discussed, it can be concluded that marketing is a managerial process involving the activities of creating, communicating, delivering, and exchanging offerings that provide value to customers, clients, partners, and society. This approach emphasizes the importance of understanding and meeting human needs, as well as building positive relationships with customers and other stakeholders. In this context, marketing is not only about selling products or services but also involves the process of creating value, expanding market reach, and building sustainable relationships. Therefore, marketing plays a strategic role in achieving organizational goals and strengthening competitive positioning in the market.

## 3 Research Method

This study employs a Research and Development (R&D) approach, aimed at creating a specific product and testing its effectiveness [19]. In this context, the product developed is a marketing application for agricultural products in Tanggamus Regency, using a prototype-based development model. The prototyping method in building an information system allows for rapid collection of information regarding user needs[20]. Through this method, prototype developers can receive direct feedback from users interacting with the initial version of the system, in the form of a prototype model that can later be developed into a more complete system [21]. The prototype approach used in this study can be seen in Figure 1 below.
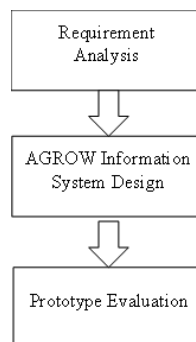


**Fig. 1.** AGROW Prototype Approach Stages

Referring to Figure 1, which illustrates the stages of the agro prototype approach, it is clear that the prototype approach involves three stages: needs analysis, agro information system design, and prototype evaluation. In the initial stage, the team conducts a needs analysis by identifying the core problems that serve as the basis for developing the AGROW system. Then, in the design stage, the team develops the software components as a basic blueprint for the agro prototype. In the evaluation stage, the team will assess the prototype or initial design of the proposed system, which will then be further developed and refined to address emerging issues. Continuous testing is conducted to ensure that all software elements meet expectations, with evaluations focusing on existing features.

As a preliminary step, interviews were conducted to gather feedback from farmers and the community in Tanggamus Regency to identify what information needs to be included in the agricultural product marketing application. A feasibility test from the usability aspect was

carried out by distributing questionnaires to the end users of the application, namely farmers and community members. A total of 20 people participated in this feasibility test, consisting of 10 farmers and 10 community members. This research aims to provide strong evidence regarding the significance and usefulness of the AGROW application in achieving the study's objectives. The design of the instrument measurements was based on the results of the literature review and previous research instruments that had passed feasibility testing using the ISO/IEC 9126 standard. The indicators used for instrument measurement meet the requirements of validity and reliability tests, as proven in previous research, such as [22] [23] [24] [25] [26].

Data collection in this study involved gathering primary data through interviews to obtain more detailed information, as well as secondary data collection as documentation supporting the testing of the prototype application model [27]. The data collection period is planned to last up to 4 weeks. The collected data will be tabulated concurrently and used as the basis for developing the AGROW system. An analytical approach will be used to explain the needs of farmers or respondents and the design of the proposed information system.

### 3.2 AGROW Overview

The agricultural product marketing information system designed in this research encompasses various key aspects related to agricultural products, from information on new products or harvests to details about available varieties and the quantity of products that can be marketed. This system not only provides comprehensive information for all parties involved in the agricultural supply chain but also ensures that the data presented is always up-to-date in real time and accurate, thereby supporting better decision-making in the marketing process of agricultural products.

The system interface is designed to be accessed from three main perspectives: Admin, Farmer, and Buyer, with each role having access and features tailored to their specific needs. Admins, for example, have full control over all data entered into the system. They are responsible for verifying, organizing, and updating product information, ensuring that every item listed in the system meets quality and accuracy standards. Additionally, Admins can monitor transaction activities within the system and generate reports useful for further analysis.

From the Farmer's perspective, this system offers convenience in uploading and managing their product information. Farmers can easily input details about their products, including variety type, available quantity, and harvest time. The system is designed to provide flexibility for farmers in managing their stock, enabling them to quickly adjust the information available to potential buyers. This is crucial in maintaining a balance between supply and demand in the market and avoiding losses due to data mismatches.

Meanwhile, Buyers can use this system to search for and obtain the information they need regarding available agricultural products. The Buyer interface is designed to be intuitive and user-friendly, with a search feature that allows them to find products by category, variety, or price. Additionally, Buyers can view their purchase history, place orders, and track their order status in real-time, all within one integrated platform. To ensure that this system operates efficiently and reliably, the database used in this system is carefully designed and illustrated through an Entity Relationship Diagram (ERD). ERD is a crucial tool in database design, providing a visual representation of complex data structures. In this context, ERD is used to depict the main entities in the system, such as products, farmers, buyers, and transactions, as

well as the relationships between these entities. The use of ERD helps in documenting data elements in a more structured and easily understood manner. This diagram plays a key role in ensuring that all entities and relationships within the system are clearly defined, thereby minimizing errors in data management.
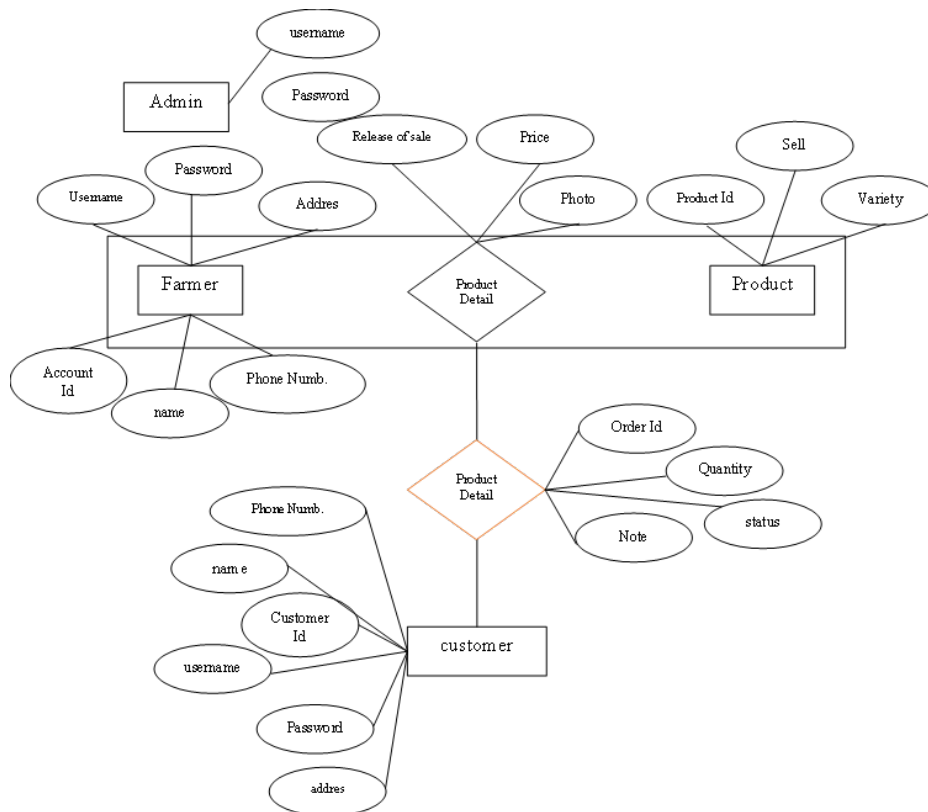


**Fig. 2.** AGROW Entity Relationship Diagram

In Figure 2, the ERD Diagram for this agricultural product marketing information system is displayed. The diagram shows how entities such as products, farmers, and buyers are interconnected, as well as how data related to each entity is organized and integrated into the database. The use of ERD in the development of this system not only facilitates the design and implementation process but also provides clear guidance for developers in managing and updating the database according to the evolving needs of the system in the future. With its carefully designed structure, this agricultural product marketing information system is expected to provide an effective and efficient solution in supporting the marketing process of agricultural products, both for farmers who want to market their products and for buyers who need quick and easy access to quality agricultural products.

The next figure shows the Home or main page of the system. On this page, several images display what is inside the AGROW application, as well as a logo at the top left corner. The Admin's homepage offers various menus for managing the sales system. When the main

page is displayed, users can access menus such as Home, About Us, Service, and Contact. Each menu on the admin page provides options to add, delete, modify, and save data.



**Fig. 3.** AGROW Homepage

Figure 4 below shows the product page, where a list of products that can be sold through the system is displayed. Sellers can update the information of the products they sell. To fill in the product data, sellers must provide information such as Product Photo, Product Name, Category, Product Quantity, and Product Price. Once the data is entered, the product requires admin verification before it can be displayed in the system.
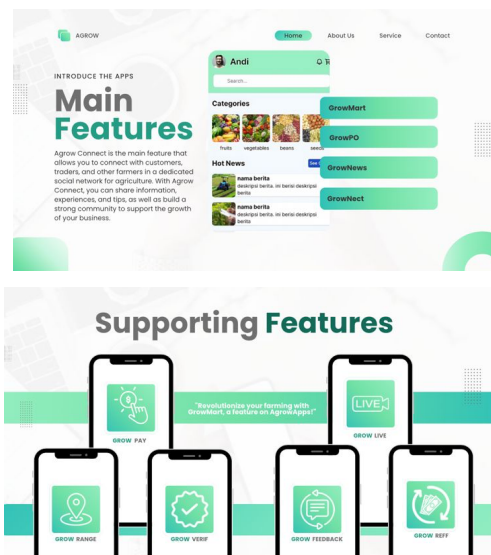


**Fig. 4.** AGROW Features

The various features provided by the AGROW application include both main and supporting features. The main features consist of GrowMart, GrowPO, GrowNews, and GrowNect. These features provide various services such as an online marketplace for agricultural products, pre-order agricultural products, agricultural news, and direct communication between buyers and farmers. Meanwhile, the supporting features consist of six features. The image shows that AGROW provides six supporting features, which include Grow Pay, Grow Live, Grow Range, Grow Verf, Grow Feedback, and Grow Reff.

Grow Pay is a direct payment feature through the AGROW application that facilitates both sellers and buyers in conducting real-time transactions. Grow Live is a feature that allows farmers to showcase their products live, including the harvesting process and agricultural practices, by streaming them to buyers or customers through the application, thus ensuring the quality of the products. Grow Range is a feature that allows customization of the geographical range, where buyers can specify the purchasing area and sellers can set the sales area.

Grow Verf is a feature that verifies agricultural products and users to ensure that those involved in the AGROW application are authenticated, reducing the risk of fraudulent practices and scams. Grow Feedback is a feature that enables reviews and Q&A between buyers and farmers, as well as bargaining, which leads to purchases. Grow Reff, or refund, is a feature that ensures safe transactions by providing a money-back guarantee in case of fraud or unmet agreements.

## 3.3 Testing Results

Once the system was successfully developed by the development team, the next step was to conduct testing to ensure the system functions well across various platforms and is easily accessible by users. System testing is a critical step in software development aimed at validating the software and ensuring that the system developed meets the expected standards. This process is vital in guaranteeing that the AGROW agricultural marketing information system can be used optimally by users.

The International Organization for Standardization (ISO) through ISO Standard 9126 proposes several key characteristics that need to be tested to assess the quality of software. The ISO 9126 standard identifies six main characteristics: functionality, usability, reliability, efficiency, portability, and maintainability. According to Olsina, four main characteristics that should be considered from the user's perspective are functionality, efficiency, reliability, and usability. This ISO standard defines quality from three different perspectives: the user's, developer's, and manager's. The four main factors that determine the highest quality are usability, functionality, reliability, and efficiency. Testing in this study focused on two external characteristics (functionality and usability) and two internal characteristics (maintainability and portability) based on ISO 9126. The primary focus of this study was on external testing, emphasizing functionality and usability. The functionality testing was conducted carefully by expert validators to examine each application feature in detail. Each feature was tested individually to ensure that the application functions according to the expected specifications. The functionality testing instrument included 10 test factors, where each functioning application feature was given a score of "1," while non-functional or faulty features were given a score of "0." A score of 1 indicates "Yes," and a score of 0 means "No." The choice between Yes/No was determined by marking the most appropriate option. Based on Table 1, the average score for the functionality test shows that the application falls under the Good category and meets

functionality standards. The results of the functionality testing by two media/system experts can be seen in Table 1.

**Table 1.** Results of Feature Validation

| Validator | Number of Features Developed | Number of Features Successfully Tested | Features Completeness |
|---|---|---|---|
| Expert 1 | 10 | 10 | 1 |
| Expert 2 | 10 | 10 | 1 |
| Average | 10 | 10 | 1 |

The table presents the results of feature validation conducted by two validators, namely Expert 1 and Expert 2. The data includes the number of features developed, the number of features successfully tested, and the level of feature completeness. Both validators evaluated 10 features that had been developed. The test results show that all features, 10 out of 10, were successfully tested by each validator.

The feature completeness level, calculated as the ratio of successfully tested features to the developed features, reached the maximum value of 1. This indicates that every feature designed met the testing criteria without any deficiencies. The averages for all categories are consistent, with the number of features developed, tested, and the completeness level being 10, 10, and 1, respectively.

Overall, the table highlights the success of the feature development and validation process, where all tested features met the expected standards. These results suggest that the system or product tested has an excellent level of readiness.

The usability aspect testing was conducted through a user questionnaire. The results of this testing showed that the AGROW information system received positive feedback from users, with a satisfaction level of 85%, or 17 users out of a total of 20 respondents. Usability testing is crucial to ensure that the system is not rejected by users due to a poor user experience. The results of this testing showed that the features in the system were well-received by users. Overall, testing of the functionality and usability aspects indicates that this information system operates very well.

## 4 Discussion

Based on the results of the development and testing of the AGROW agricultural product marketing information system, several key aspects need to be discussed to better understand the system's performance and advantages. This discussion will cover an evaluation of the system's main features, the reliability of functionality and usability testing, and how the system can make a significant contribution to supporting the marketing process of agricultural products.

### 4.1 Key Features of AGROW and Its Impact on Agricultural Marketing

The AGROW system is designed by considering the main needs of key players in the agricultural supply chain, including admins, farmers, and buyers. By providing interfaces

tailored to each role, AGROW facilitates the management of product information, streamlines transactions, and enhances engagement between farmers and buyers. Features such as GrowMart, functioning as an online marketplace, GrowPO, enabling pre-ordering, and GrowNect, which directly connects farmers with buyers, demonstrate that the system not only provides information but also creates added value for all involved parties.

Additionally, supporting features like Grow Pay and Grow Live offer practical solutions for payments and live product presentations, increasing transparency and trust between sellers and buyers. This is especially important in today's digital world, where trust and security in transactions are crucial factors. Therefore, AGROW successfully meets market demands for efficiency, reliability, and ease in conducting agricultural transactions.

### 4.2 Reliability of Functionality and Usability Testing

Functionality testing conducted by expert validators shows that the AGROW system has a very high level of reliability. All developed features have been tested and meet functionality standards, with an average score of 1, meaning all features function as expected. This indicates that AGROW is capable of operating each feature without failure or malfunction, which is critical for maintaining user satisfaction and smooth system operation.

Meanwhile, usability testing also yielded satisfactory results, with a user satisfaction rate of 85%. Users found the system easy to use, and the features were easily accessible. This demonstrates that AGROW has successfully created an intuitive and responsive user interface, accessible to a wide range of users, including farmers who may not be familiar with technology. User involvement in this testing also ensures that the system has been optimized to meet the needs and expectations of the end users.

### 4.3 AGROW's Contribution to Agricultural Marketing

AGROW's success in functionality and usability testing indicates that this system has great potential to positively impact the marketing of agricultural products. With a reliable and easy-to-use system, farmers can more efficiently manage product information and reach a wider market. This will ultimately increase farmers' income and strengthen the agricultural sector as a whole.

On the other hand, buyers benefit from quick and easy access to a variety of quality agricultural products, allowing them to make more informed purchasing decisions. Moreover, features such as Grow Verf and Grow Reff ensure that transactions conducted through AGROW are safe and secure, which in turn enhances user trust in the system.

Overall, this discussion shows that AGROW is an innovative solution that not only supports efficiency and reliability in agricultural product marketing but also provides significant positive impacts for all stakeholders in the agricultural supply chain. Its success in functionality and usability testing proves that this system is ready for widespread use and is expected to become a model for the development of similar information systems in the future.

## 5. Conclusion

Based on the research and testing, the AGROW agricultural marketing information system has proven to be an effective and efficient digital solution for supporting the agricultural marketing process. It provides comprehensive and relevant features for stakeholders, including farmers, admins, and buyers. Key features like GrowMart, GrowPO, GrowNews, and GrowNect enhance operational efficiency and expand market access. Functionality tests show all features work flawlessly, while usability tests report 85% user satisfaction, indicating both reliability and ease of use.

To continue improving, AGROW should regularly update features to keep up with technological developments and market demands. Strengthening data security measures, particularly for user protection and transaction encryption, is essential. Regular training programs for farmers and other users would also help maximize system adoption and usage. AGROW has the potential to expand nationally and internationally, and the development of a strategy to reach broader markets is advisable. Regular monitoring and evaluation of system performance, user satisfaction, and its impact on sales should be conducted to ensure continuous improvement.

Despite its success, AGROW faces some limitations. Expanding its reach beyond local markets, ensuring data privacy amidst evolving cyber threats, overcoming technology adoption barriers for some users, and dealing with limited internet access in rural areas are challenges that need to be addressed. Tackling these issues will allow AGROW to further enhance its impact on the agricultural sector.

## References

[1] Hidayah, I., Yulhendri, & Nora S. (2022). Peran Sektor Pertanian dalam Perekonomian Negara Maju dan Negara Berkembang : Sebuah Kajian Literatur. *Jurnal Salingka Nagari, 1*(1), 28-37.

[2] Syahputri, D., Sofia L., & Bunga A. (2024). Analisis Peran Sektor Pertanian Dalam Pengurangan Kemiskinan dan Peningkatan Kesejahteraan di Negara-Negara Berkembang. J*urnal Ekonomi, Bisnis dan Manajemen (EBISMEN), 3*(1), 93-103.

[3] Hasibuan, A., Suhela Putri N., Fitri Amja Y., Henni Adlini H., & Nyak F. (2022). Strategi Peningkatan Usaha Tani Padi Sawah Untuk Meningkatkan Perekonomian Masyarakat Desa. J*urnal Pengabdian Masyarakat Bidang Sains dan Teknologi, 1*(4), 477-490. 10.55123/abdikan.v1i4.1095

[4] Fitriani, Sutarni, Dwi H., Hanung I., & Dyah Aring H. L. (2017). Pertanian Perdesaan Lampung: Peluang dan Tantangan. *JoFSA, 1*(2), 43-52.

[5] Hermawati, I., Dewi S., Koeswinarno, Murry Harmawan S., Intan P., & Tusino. (2023). Kajian Daya Saing Pertanian dengan Pendekatan Rantai Pasok di Kabupaten Purworejo Provinsi Jawa Tengah. *Laporan Penelitian*, Badan Riset Inovasi Nasional Bekerjasama dengan Badan Perencanaan Pembangunan Daerah Kabupaten Purworejo Dan Universitas Muhammadiyah Purworejo.

[6] Kholili, Ahlis N. & Alfin H. (2023). Sistem Informasi Penjualan Hasil Pertanian Berbasis Mobile. *Informatika dan Teknologi (Intech), 4*(2), 52 – 57.

[7] Suwardi, Srie Juli R., Tri P. (2022). Pembangunan Desa Berbasis Sumber Daya Manusia Modal dan

Kewirausahaan. *Jurnal Uniba, 3*(01), 52-59.

[8] Satriawan, B. & Henny O. (2012). Upaya Pengentasan Kemiskinan pada Petani Menggunakan Model Tindakan Kolektif Kelembagaan Pertanian. *Jurnal Ekonomi Pembangunan, 13*(1), 96-112.

[9] Westerman, G., Calméjane, C., & Bonnet, D., Ferraris, P., & McAfee, A. (2011). Digital Transformation: A roadmap for billion dollar organizations. *MIT Center for Digital Business and Capgemini Consulting, 1*(1–68).

[10] Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems, 28*(2), 118–144. http://dx.doi.org/10.1016/j.jsis.2019.01.003

[11] Morakanyane, R., Grace, A., & O'reilly, P. (2017). Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature..

[12] Ailie K.Y. Tang. (2019). A systematic literature review and analysis on mobile apps in m-commerce: Implications for future research. *Electronic Commerce Research and Applications, 37.* https://doi.org/10.1016/j.elerap.2019.100885.

[13] Hsu, C. L., & Lin, Judy Chuan-C. (2015). What drives purchase intention for paid mobile apps? – An expectation confirmation model with perceived value. *Electronic Commerce Research and Applications, 14*(1), 46-57. https://doi.org/10.1016/j.elerap.2014.11.003

[14] AMA. (2017). *Definitions of Marketing.* Artikel dalam American Marketing Association, https://www.ama.org/the-definition-of-marketing-what-is-marketing/

[15] Seran, Renyarosari B., Elia S., & Muinah F. (2023). Strategi Pemasaran yang Unik: Mengoptimalkan Kreativitas dalam Menarik Perhatian Konsumen. J*urnal Mirai Management, 8*(1), 206 – 211.

[16] Laksana, M. F. (2019). *Praktis Memahami Manajemen Pemasaran.* Sukabumi: CV Al Fath Zumar.

[17] Kotler, Phillip & Kevin Lane Keller. (2016). *Manajemen Pemasaran edisi 12 Jilid 1 & 2.* Jakarta: PT. Indeks.

[18] Tjiptono F. & Diana. (2020). *Pemasaran.* Yogyakarta: Penerbit Andi.

[19] Sugiyono. (2016). *Metode Penelitian Kuantitatif, Kualitatif dan R&D,* Cetakan ke-24. Bandung: Alfabeta.

[20] Purnomo, D. (2017). Model Prototyping Pada Pengembangan Sistem Informasi. JIMP - *Jurnal Informatika Merdeka Pasuruan, 2*(2), 54-61.

[21] Isnaurokhmah, Kusumas Astri A., Lailatur R., &Ilham A. (2024). Perancangan Aplikasi Kasir dengan Metode Prototype Studi Kasus: UMKM Artasari. *Merkurius : Jurnal Riset Sistem Informasi dan Teknik Informatika, 2*(4), 135-148.

[22] Ackaah, W., Kanton, A. T., & Osei, K. K. (2022). Factors influencing consumers' intentions to purchase electric vehicles in Ghana. Transportation Letters, 14(9), 1031–1042. https://doi.org/10.1080/19427867.2021.1990828

[23] Yeğin, T., & Ikram, M. (2022). Analysis of Consumers' Electric Vehicle Purchase Intentions: An Expansion of the Theory of Planned Behavior. *Sustainability (Switzerland), 14*(19). https://doi.org/10.3390/su141912091

[24] Khandelwal, U., & Yadav, S. K. (2014). Green Marketing and Sustainable Development: Marketing

Professionals Attitude towards Green Marketing. *International Journal of Marketing & Business Communication; New Delhi, 3*(1), n/a. https://search.proquest.com/docview/1733235047/abstract/4C3FB3FB3639459BPQ/4

[25] Tu, J. C., & Yang, C. (2019). Key factors influencing consumers' purchase of electric vehicles. *Sustainability (Switzerland), 11*(14). https://doi.org/10.3390/su11143863

[26] Morton, C., Anable, J., & Nelson, J. D. (2017). Consumer structure in the emerging market for electric vehicles: Identifying market segments using cluster analysis. *International Journal of Sustainable Transportation, 11*(6), 443–459. https://doi.org/10.1080/15568318.2016.1266533

[27] Taherdoost, H. (2021). Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects. *International Journal of Academic Research in Management (IJARM), 10* (1), 10-38. ffhal-03741847f