

Increasing Efficiency and Effectiveness through Digitalization in Batik Cooperative Business Processes (Kombas)

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ABSTRACT

Keywords: Inventory System; Operational Optimization; Purchase; Sales; Return.

In company operations, of course, records in the form of stock data and transaction data are needed to make reports. Likewise, KOMBAS has still used manual recording so there are still many shortcomings that cause cooperative operations to be not optimal. The method used is a waterfall methodology consisting of needs analysis, system design, and testing. The type of research used is qualitative research by conducting an interview process with a resource person, namely the chairman of the Bekasi Batik Cooperative (KOMBAS). The results of the project are an analysis of business flows, system flows, and business models, and then the final result is a website-based application design that has various features according to the company's needs. The features available in the application include goods data, supplier data, customer data, employee data, and transaction data (sales, purchases, and returns). These features, in addition to being able to enter data, also have access to update and delete. This project concludes that the design of a website-based inventory application will certainly provide efficiency and productivity for cooperatives that provide automation processes, smoother workflows, and faster access to information so that it can save time, costs, and resources, and improve service quality.



Introduction

Indonesia has a lot of cultural heritage, one of which is batik. Since 2009, UNESCO has recognized batik as a world cultural heritage. Not only is it part of Indonesia's cultural identity, but batik also has great potential as an industry (Abdulghani & Sati, 2020). In recent decades, the batik industry has experienced rapid growth, both domestically and as an export product. Batik exports in 2017 reached \$58.64 million with Japan in Asian countries, and also countries in Europe such as the United States (Adha, Supriyanto, & Timan, 2019). Quoting from an article by the Ministry of Industry, in 2022 the export value of batik and batik products exceeded \$64.56 million and increased by 30.1 per cent

compared to 2021. Meanwhile, in 2023 in the January-April period, the value of batik exports reached \$26.7 million.

According to data from BBKB or the Ministry of Industry's Handicraft and Batik Center, there are around 3,159 batik business units. Of these, there are 208 large-scale batik industry units in 2021 and micro-small and medium-scale batik businesses totalling around 2,951 units in 2018.

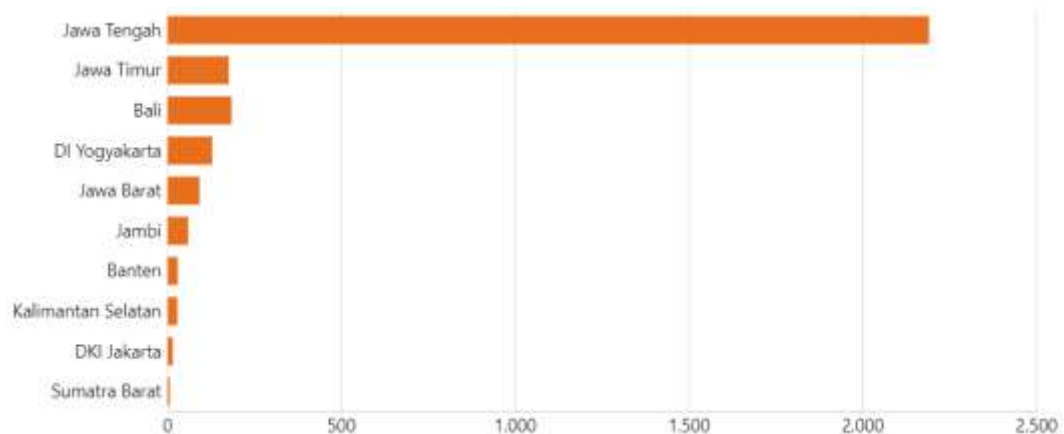


Figure 1
The Number of Provinces with the Most Batik Industry for the Period 2018 – 2021 Micro, Small – Medium Scale Business Units

In the era of industrial development 4.0 and rapid globalization, digital business has become the centre of attention in economic and industrial transformation (Adlini, Dinda, Yulinda, Chotimah, & Merliyana, 2022). Digitalization is the main key to improving company performance and competitiveness. Digitalization not only enables operational efficiency but also opens up new opportunities in marketing, sales, and business management.

A cooperative based on Law Number 25 of 1992 is a business entity consisting of individuals or cooperative legal entities based on the principle of cooperatives in the economic sector based on the principle of kinship (Handayani, Taher, Usman, & Ambarita, 2019). The batik cooperative that is the object of the author's research is the Bekasi Batik Cooperative or Bekasi Basis Community (KOMBAS) which was founded by Mr. Barito Hakim Putra. Based on the results of the author's interview with Mr. Barito Hakim Putra using Five Force Porter, PESTEL, and SWOT analysis, the business concept applied by the Bekasi Batik cooperative is business-to-business (B2B) and Business-to-customer (B2C) because the Bekasi batik cooperative collaborates with several markets around the city of Bekasi. In addition, this batik cooperative also provides several batik products such as Bekasi city batik uniforms, batik training, batik equipment, batik accessories, and Bekasi city batik t-shirts that can be sold both retail and wholesale to customers (Chrisdianto & Putri, 2022).



Figure 2
One of the products of the Bekasi Batik Cooperative

Although the growth of the batik industry has increased both from customer demand and market demand, every industry must face several challenges in running its business, the author found some of the challenges faced by the Bekasi batik cooperative, namely, still using manual recording in inventory management, by using manual recording in business processes in batik cooperatives can cause several things, namely: scale limitations, Manual recording can have a bad impact on registration in batik cooperatives if there are high transactions, it can hinder the ability of businesses to meet customer needs promptly and can hinder cooperatives from obtaining information effectively (Darnita, Discrise, & Toyib, 2021). In addition, the risk of data loss can also occur because physical documents are vulnerable to technical things such as damage, loss, or theft. Without proper backup, this can cause losses to the Bekasi Batik cooperative, and have a dependency on one individual, if someone is absent, resigns, or makes a mistake can significantly disrupt business operations and can have a negative impact. Despite the lack of digital strategy in the digital era, the digital strategy in question is technology or digital systems that can help companies carry out operational activities (Wahid, 2020). Lack of optimization in the use of the website such as lack of maintenance and updates, if the website is not updated both in content and visually, customers will usually lose interest and view the site as unreliable because it does not have the latest information, lack of SEO optimization (Search Engine Optimization) if it has a website that is not optimized in search engines, this can make the company's website difficult to find by customers, and do not have operational calculations, either stock or sales reports, this can make it difficult for companies to make decisions because of the lack of information needed to evaluate overall business performance and difficulty planning future strategies. The author feels that this can hinder the effectiveness and efficiency of running business processes in batik cooperatives (Faiqoh & Desmawati, 2021).

The Bekasi Batik Cooperative was chosen as the object in writing this project because the company does not yet have an automatic inventory system. As a company that focuses on batik production, the need for efficient and organized stock management has an important role in business growth.

This research aims to increase effectiveness and efficiency through digitalization with the design of making inventory and recording sales reports and stock-based websites in the Bekasi Batik cooperative.

Method

Data Collection Methods

In obtaining data and gaining a deep understanding of batik cooperative companies, the approach used is a qualitative method. The author uses this method because he wants to gain a deep understanding, explore diverse points of view, and capture the complexity and dynamics of the object being studied. In practice, there are two data collection methods that the author uses, namely the interview and observation methods. This is done because it is more effective than quantitative methods such as questionnaires, experiments, regression analysis, surveys, and others. In addition, the author also wants to know a more in-depth perspective on the Bekasi batik cooperative business.

Interview Methods

Interviews are a data collection method that involves direct interaction between researchers and respondents to obtain subjective information, views, or experiences regarding certain topics. In simple terms, an interview is a process of interaction between the interviewer and the source of information through direct communication or it can be said to be a face-to-face conversation between the interviewer and the source of information called the source (Effendy & Sunarsi, 2020).

Observation Methods

In writing this DBP, the author made direct observations at the location of the Bekasi Batik cooperative and collected some data that can support business processes and inventory to be used as a reference in making digital solutions that will be provided.

Literature Studies

The author uses a literature study method by reading several articles on the internet, and several journals that are by the data needed to strengthen the author's data in providing digital solutions for Bekasi batik cooperatives.

Data Analysis Methods

The data analysis method is a method used to analyze and interpret data to achieve research objectives or solve existing problems. According to (Fadilah, Rianto, & Hartati, 2020) data analysis is the process of compiling and categorizing data, and looking for patterns or themes to know their meaning.

Results and Discussion

Business Situation Analysis

The Bekasi Batik Cooperative or KOMBAS is an MSME engaged in the business of convection products and services which is supported by machines that can produce in a shift system to the partners of the Bekasi Batik cooperative.

After collecting data through interviews with the owners of the Bekasi Batik Cooperative and direct observation, the author found the business process flow of the Bekasi Batik Cooperative can be explained as follows:

Receipt of goods

Receipt of goods is the first step in the business process of the Bekasi batik cooperative which includes the receipt of raw materials in the form of batik clothes from cooperative members. The steps taken by the Bekasi Batik cooperative in receiving goods are to identify customer needs.

After knowing the customer's needs and getting the product, after the goods arrive, the Bekasi batik cooperative checks the quantity and quality of the goods received.

Storage of goods

After the goods are received from the cooperative members, the batik cooperative arranges and stores the goods in the appropriate storage warehouse.

The steps taken by the Bekasi batik cooperative in storing goods are to hand over to the warehouse or storage area of batik craftsmen.



Figure 3 Storage Warehouse at Batik Artisans

In addition to being stored in the place of batik craftsmen, in the batik cooperative there are also several displays of goods, for visitors if they want to make purchases on the spot.

Analysis of Porter's Five Forces

The author also uses Porter's five forces analysis on the Bekasi Batik cooperative to understand the attractiveness and competitive dynamics of a company. By understanding external factors, authors can identify competition, formulate strategies to increase the company's profitability, and obtain existing opportunities.

In addition, this analysis can also help in business planning and allow Bekasi Batik cooperatives to adjust strategies to increase efficiency and competitiveness.

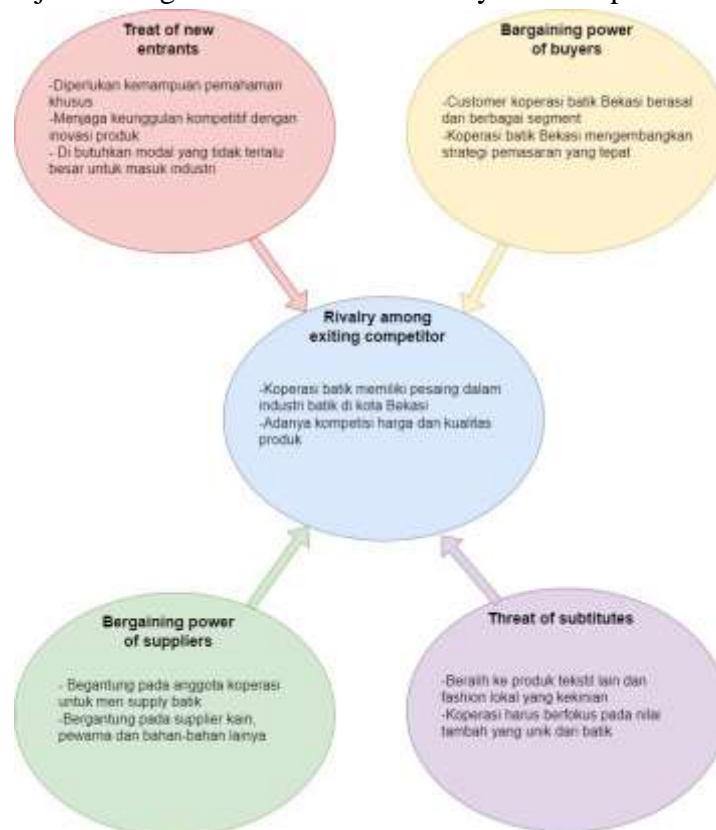


Figure 4 Porter's Five Force Analysis of Bekasi Batik Cooperative

Berikut merupakan penjelasan analisis porter's five forces dari gambar diatas.

Threat of New Entrants (Ancaman Pendetang Baru)

1. To enter the industry requires special comprehension skills
2. The Bekasi batik cooperative needs to maintain its competitive advantage with product innovations such as the manufacture of batik-motif bomber jackets.
3. It takes not too large capital to enter the industry

Threat of Substitutes (Ancaman Produk Pengganti)

1. Although batik has strong cultural and artistic value, there is potential for consumers to switch to other textile products such as imported clothing or contemporary local fashion.

2. The Bekasi batik cooperative must focus on the unique added value of batik, such as fabric quality, and distinctive and sustainable design, in order to be able to maintain consumer interest and reduce the threat of substitute products.

Bargaining Power of Buyer (Daya Tawar Konsumen)

1. Batik customers in Bekasi can come from various segments, ranging from individuals to wholesalers. Wholesalers may have greater negotiating power regarding prices and customer requirements.
2. Bekasi Batik cooperatives must develop the right marketing strategy and establish partnerships with large retailers or wholesalers to maintain strength in setting prices and expanding their market share.

Bargaining Power of Suppliers (Daya Tawar Pemasok)

1. The Bekasi batik cooperative depends on its cooperative members for its batik men-supply.
2. The Bekasi Batik cooperative depends on suppliers of fabrics, dyes, and other materials.
3. Production costs and profits of cooperatives are influenced by suppliers if there is an increase in the price of raw materials.

Rivalry of Competitors (Persaingan dengan Perusahaan Sejenis)

1. The Bekasi batik cooperative has competitors in the batik industry in the city of Bekasi, including independent batik artisans, traditional batik shops, and large batik producers.
2. The level of competition can increase at any time due to competition in price and product quality.

Analysis Value Chain

Value chain analysis is a research process carried out internally by a company to understand the entire series of activities in creating, producing, and delivering products or services to customers. Value chain analysis consists of two main types of activities, namely primary activities and support activities.

Primary activities are activities that are directly involved in the manufacture of products or services, starting from the provision of raw materials to the sale of products to customers, these primary activities include inbound logistics, operations, outbound logistics, marketing, or sales and service.

Meanwhile, support activities are supporting activities of primary activities. The activities carried out by this activity include procurement, technological development, human resources management, and firm infrastructure or general administration.

The Bekasi Batik Cooperative (KOMBAS) is an "old player" in the field of clothing, convection, and micropayment products and services. This cooperative is an MSME in the Bekasi area. This cooperative has been operating for 15 years and of course, has value in the eyes of customers. The value offered by the Bekasi Batik cooperative is, focusing the cooperative on the goal and applying the company's professionalism in terms of corporate governance, human resources, quality improvement, and productivity to achieve partner and consumer satisfaction.

SWOT Analysis

The author conducted a SWOT analysis of the Bekasi Batik Cooperative to provide understanding, identify factors that affect performance, and determine the direction of the Bekasi Batik Cooperative before being given a digital solution. The results of the analysis are as follows:



Figure 5 SWOT Analysis of the Bekasi Batik Cooperative

a) Strength

The Bekasi batik cooperative has knowledge and expertise in the batik process, besides that the batik cooperative also has a typical design of the city of Bekasi and high quality so that it can attract customer interest. In addition to the products that are the flagship of the Bekasi Batik Cooperative, members or partners of the Bekasi Batik Cooperative are also no less important.

Every member in the Bekasi batik cooperative looks solid and compact and supports good cooperation. The Bekasi batik cooperative also receives support from the local government and the surrounding community in developing a batik business.

b) Weakness

The weaknesses of the Bekasi batik cooperative include limitations in marketing and promotion strategies, especially in the wider market, besides that the Bekasi batik cooperative still uses manual recording in its business processes, causing the operational process to be unstructured and not automated.

The limited adoption of modern technology is also one of the weaknesses of the Bekasi batik cooperative because it can hinder the efficiency of batik production. One of

the causes of the limitation of the use of technology is the limitation of human resources which are still relatively low in the use of technology due to the absence of training on the technology so there are limitations in the skilled and managerial workforce who can manage the Bekasi batik cooperative well.

c) Opportunity

The opportunities that can be taken advantage of by the Bekasi Batik Cooperative are the events that are always attended by the Bekasi Batik Cooperative such as the Indonesian Fashion Parade, and Bekasi Fashion Week.

In addition to the events attended, the Bekasi batik cooperative also created product innovations in the form of batik-patterned bomber jackets which can be an attraction to attract customer interest in using batik products. The batik motifs that are designed are always contemporary so that batik can be used as casual and everyday clothing and eliminate the stigma of the community regarding batik only for formal events.

d) Threats

Threats that can occur in the Bekasi batik cooperative include competition with other batik industries or industries engaged in the same field, besides that changes in consumer tastes can be a threat because it can have an impact on the demand for batik.

In addition to threats that can be influenced by human factors, threats that come from economic factors can also occur such as economic instability which can affect consumer purchasing power and fluctuations in raw material prices can also affect the production cost of making batik.

The following is the SWOT matrix of the Bekasi Batik cooperative, which can be explained through the table below.

Table 1
SWOT Matrix of Bekasi Batik Cooperative

	<i>Strengths</i>	<i>Weakness</i>
	<i>SO Strategies:</i>	<i>WO Strategies:</i>
	<ul style="list-style-type: none"> Leveraging traditional expertise and product quality to enter the global market through e-commerce, 	<ul style="list-style-type: none"> Develop digital marketing strategies to expand reach, Access government programs to obtain capital and human resource training.
<i>Opportunities (Peluang)</i>	<ul style="list-style-type: none"> Using local support to attract <i>customers</i> such as attending batik festivals or exhibitions held in the city of Bekasi such as Bekasi <i>Fashion Week</i>. 	

	<i>ST Strategies:</i>	<i>WT Strategies:</i>
Threats (Ancaman)	<ul style="list-style-type: none"> Increasing cooperation with the government community to face competition, Diversify products to deal with changing <i>customer</i> tastes. 	<ul style="list-style-type: none"> Improve product efficiency with technology to overcome raw material limitations and price fluctuations, Managing economic risks by expanding markets and products.

With the creation of this SWOT and Matrix analysis, it is hoped that the Bekasi Batik cooperative can plan the right strategy, especially considering the weaknesses and threats that will be faced, and be able to make the most of the strengths and opportunities that the Bekasi batik cooperative has.

Fishbone Analysis

Based on the results of data collection through interviews and observations, the main problem in the Bekasi batik cooperative is that the operational process is still manual which has the potential to cause data inaccuracy, delays in decision-making, and lack of efficiency in daily operations. This can lead to data duplication, input errors, and difficulty in tracking the necessary information.

Then in terms of the use of technology, the Bekasi batik cooperative has used computers to help find and create several new motifs of batik products, but the use of technology is not maximized to increase work efficiency.

With manual recording carried out by the Bekasi Batik cooperative, the risk of human error is very high. Errors that occur can result in losses for the Bekasi Batik cooperative, inaccurate stock data, and other operational problems.

Proposed Digital Business Strategy for Business Enterprises

Based on the analysis that has been explained earlier, the Bekasi Batik cooperative has obstacles in the operational report section such as managing the stock of goods. The obstacles faced by the Bekasi Batik Cooperative are because the operational recording is still done manually, this can be a limitation of the Bekasi Batik Cooperative in terms of effectiveness, efficiency, data accuracy, and data security. Manual recording can be an obstacle to producing accurate and timely financial statements.

In addition, manual operational recording can also make it difficult to make a quick and effective decision-making process, because you have to wait for the results of the report before you can finally decide on the next step. In addition, the risk of data loss or damage also increases due to manual recording stored in physical form that is susceptible to damage and loss.

Design Thinking DFV

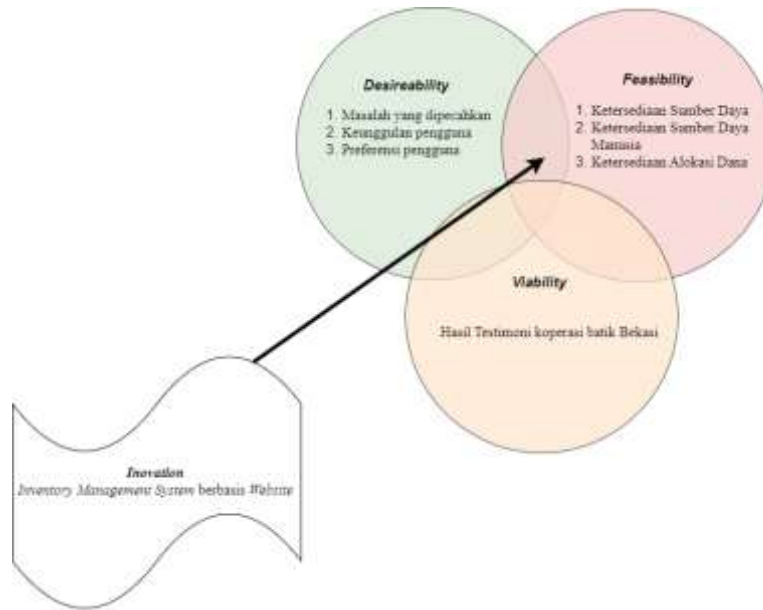


Figure 6 DFV Analysis

Problem Solved

The proposed inventory management system aims to overcome the problem of inventory management in the Bekasi Batik cooperative, where the problems or obstacles experienced are related to traditional operational systems such as stock recording that does not exist and has not been automated and recording management that has not been structured.

The existence of software inventory will be a tool that helps companies in tracking, managing, and supervising all company inventory, as well as processes related to company inventory related to sales, recording and reporting, and member management.

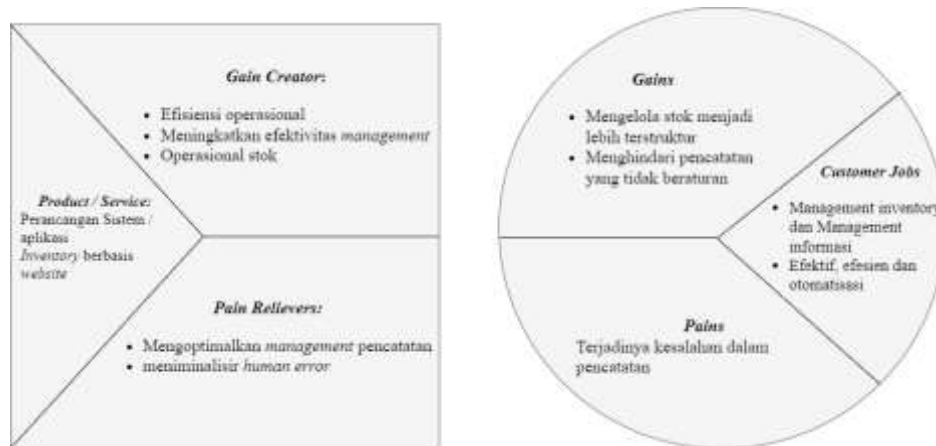
User Advantages

The inventory management system was created for cooperative members who have tasks in stock management and record-keeping, where previously they had difficulties in managing record-keeping. Users want a solution that can simplify the process of managing records.

User Preferences

The inventory management system is designed according to the user's wishes, where this system presents buttons and features that are easy to understand, according to the current needs of the Bekasi Batik cooperative. The simple page design makes users feel comfortable when using the application.

In order to determine the compatibility between the advantages of the system and the needs of users, the author conducts a value proposition analysis in this case depicted in the form of a value proposition canvas diagram, as follows:



Gambar 7 Value Proposition Canvas

Resource Availability

The resources needed to develop an inventory management system are mostly available, including a prototype design team, enabling software and hardware, and adequate technological infrastructure.

Availability of Human Resources

There is a development team that has succeeded in creating an initial model of the inventory management system that will be designed, making it possible to conduct further testing and evaluation of the functionality and user needs.

Availability of Fund Allocation

The detailed budget evaluation reflects a significant commitment from the Bekasi Batik cooperative to ensure the successful implementation of the inventory system. Sufficient allocation of funds allows for the payment of labour, acquisition of necessary hardware and software, as well as management of operational and administrative costs during the development process.

Viability

Based on the results of the testimonials, the inventory management system design has been assessed by the necessary needs. This application is also considered successful in making it easier for Bekasi batik cooperative partners who initially recorded manually and unstructured to become more automated and more efficient. This design is considered to be able to increase the effectiveness and effectiveness of the business process of the Bekasi Batik cooperative.

Thus, the results of the evaluation concluded that the design of the BatikStockRoom inventory system application was to the needs and provided significant benefits for the company.

Black Box Testing

After making a prototype of the BatikStockRoom inventory system, the author will conduct tests based on alpha and beta approaches using the black box method. This black box analysis will look at the functional aspects of the system to find out if the prototype of the BatikStockRoom inventory system is running as expected and working as it should.

Conclusion

The conclusion of the Digital Business Project that the author has worked on by designing a website-based inventory application for the Bekasi batik cooperative shows that this application can optimize the recording of stock and operational reports, including sales, purchases, and returns, to be more automated and structured, and able to overcome various problems that arise. The creation of a website-based inventory design for the Bekasi Batik cooperative provides accuracy in managing the stock of goods and other operations. With this website-based inventory system, efficiency and productivity can be improved through smoother workflows and faster access to information, so that it can save time, costs, and resources and improve service quality. In addition, this system also minimizes delays in making final reports. Furthermore, in the design stage, the author uses various tools and diagrams to visualize the designed system. Some of the tools used include flowcharts, Entity-Relationship Diagrams (ERD), Data Flow Diagrams (DFD), activity diagrams, use case diagrams, class diagrams, sequence diagrams, as well as wireframes, mockups, and prototypes created using Figma. The use of these tools ensures that the system design is made clear and detailed, making it easy for further implementation and development.

Bibliography

- Abdulghani, Tarmin, & Sati, Bambang Plasmana. (2020). Pengenalan Rumah Adat Indonesia Menggunakan Teknologi Augmented Reality Dengan Metode Marker Based Tracking Sebagai Media Pembelajaran. *Media Jurnal Informatika*, 11(1), 43–50.
- Adha, Maulana Amirul, Supriyanto, Achmad, & Timan, Agus. (2019). Strategi peningkatan mutu lulusan madrasah menggunakan diagram fishbone. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan*, 5(01), 11–22. <https://doi.org/10.32678/tarbawi.v5i01.1794>
- Adlini, Miza Nina, Dinda, Anisya Hanifa, Yulinda, Sarah, Chotimah, Octavia, & Merliyana, Sauda Julia. (2022). Metode penelitian kualitatif studi pustaka. *Jurnal Edumaspul*, 6(1), 974–980.
- Chrisdianto, Wahyudi, & Putri, Sukmawati Anggraeni. (2022). Pengembangan Sistem Manajemen Tema Website Berbasis Metode Agile Scrum. *J. Ilm. Betrik*, 13(2), 139–151.
- Darnita, Yulia, Discrise, Aldino, & Toyib, Rozali. (2021). Prototype Alat Pendeksi Kebakaran Menggunakan Arduino. *Jurnal Informatika Upgris*, 7(1).
- Effendy, Aidil Amin, & Sunarsi, Denok. (2020). Persepsi mahasiswa terhadap kemampuan dalam mendirikan UMKM dan efektivitas promosi melalui online di kota tangerang selatan. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 4(3), 702–714.
- Fadilah, Siti Chaerul, Rianto, Harsih, & Hartati, Tri. (2020). Implementasi Framework Code Iginter Menggunakan Metode Waterfall Pada Sistem Informasi Penjualan Pt. Supreme Jaya Abadi. *JISICOM (Journal of Information System, Informatics and Computing)*, 4(1), 134–140.
- Faiqoh, Puput, & Desmawati, Liliek. (2021). Pemberdayaan Perempuan Melalui Home Industri Batik Sekar Jagad Di Dusun Tanuraksan Desa Gemeksekti Kabupaten Kebumen. *Lifelong Education Journal*, 1(1), 23–34.
- Handayani, Try, Taher, Yuyu Sumiyati Bin, Usman, Alfanugrah Hi, & Ambarita, Arisandy. (2019). Aplikasi Pemeriksaan Biaya Instalasi Tegangan Listrik Rendah Berbasis Web Pada Pt. Ppilm Maluku Utara. *IJIS-Indonesian Journal On Information System*, 4(1), 32–40.
- Wahid, Aceng Abdul. (2020). Analisis metode waterfall untuk pengembangan sistem informasi. *J. Ilmu-Ilmu Inform. Dan Manaj. STMIK*, No. November, 1(1), 1–5.