Application Leveling Conditions and Product Quality of Small and Medium Enterprises (SMEs) for Local Government

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Abstract. The purpose of the study is to know the level of conditions and product quality level of Small and Medium Enterprises (SMEs). In the experimental method, the data gathered using the questionnaire, observation, and interview on the offender of SMEs granted to perpetrators of SMEs. Data processing results in the form of graphics applied to the system designed using stages among others 1) analysis of Problems, 2) needs analysis, 3) system design, 4) applicability and test systems and 5) Maintenance the system. The trial of a system using a smoke testing method to know whether the system complies with the expected or not. Based on the results show the Government in monitoring and evaluating the level of SMEs conditions and product quality so that it can be developed into a powerful competitive SMEs. Application leveling conditions and product quality of small and medium enterprises (SMEs) for Local Government.

1. Introduction

Small and medium enterprises (SMEs) is proprietary small business types that have a maximum net income of Rp 200 million. It's also become fundamental importance to many economies. in developing countries the small and medium enterprises (SMEs) has improvement is very significant to nation's economy and public procurement. [1] SMEs is an activity of the people's economy which has a small scale with the majority of businesses small and necessary protection to avoid unhealthy competition between small businesses. [2] Small, medium enterprises (SMEs) is one of the country's economy by donating approximately 60% of the Gross Domestic Product as well as open up job opportunities in the community. In other continents, whether in Asia, Europe and America's small business medium became the main proponent of the economy for the State. the situation can happen because the State Governments had a policy that supports the creation of SMEs that are healthy and strong.[3] In Indonesia, the growth of the small and medium business has been developing rapidly, especially in the sectors of labor absorption, i.e., of 99.74% and contributing in the Gross Domestic Product of 1,013.5 trillion or around 56.73%. The Government also contribute to the development of SMEs as a form of support for economic growth and the State of the environment in the community within published law No. 10 The year 2003 about government-owned enterprises (SOEs). [4] To develop small and medium
enterprises in need of increased competitiveness that can be seen from independence, the development of human resources professionals, the quality of its products, technology support partners especially in obtaining capital, support Government, intellectual property rights, and relations with outside parties. Those things can support the increased competitiveness of SMEs both national and international scale.[5][6] Here, the purpose of this study is to design an Application that makes it easy for local governments to conduct monitoring of the level of State and product quality of SMEs in the area so that it could help find a solution of the obstacles faced by the owner business formation and collaboration mutualism between the parties involved. This Application in local government especially Department of cooperatives, small and medium enterprises, industry, trade and human resource can see the whole SMEs data, the resulting products of SMEs, latest news, presentation types of SMEs single or partnership, the number of SMEs that received funding, the level of education of the owner, age, gender and SMEs product buyers.

2. Experimental Method
The design of Applications, starting from the analysis of the problems of SMEs that are in the area of Sidoarjo. The local Government has not been able to optimally in conducting monitoring and coaching against existing SMEs mainly SMEs located outside the city. Monitoring is done manually by directly come to place SMEs then do logging conditions there without any further processing, and data storage. So it can be difficult at the time will do the construction and improvement of SMEs, human resources as well as product quality.[7] Based on the above, the problem can be in the analysis of Application needs, ranging from data collection, observation, interview and the need for software and hardware. [8] Data collection using the questionnaire in the spread to whole SME owners Sidoarjo. The results of the data collection are used to map and clustering SMEs by the needs of the local governments that were later used for leveling condition of SMEs that are ready to compete. Specifications requirements of system information are described in table 1.

| Table 1. Functional needs of Applications |
|------------------------------------------|
| **The user's Application**               |
| **Information Needs**                    |
| The Owners Of SMEs                       |
| a) See the product itself                 |
| b) See the local government agenda        |
| c) See the latest news                    |
| d) See links the other SMEs products      |
| e) See a gallery of SME products          |
| The Local Government                     |
| a) Could input, view, modify and delete data for all SMEs in Sidoarjo |
| b) Could input, view, modify and delete see owners of SMEs |
| c) Could input, view, modify and delete Affiliate of SMEs |
| d) Could see the mapping and clustering data SMEs based on patronage and funds |
| e) Could see the mapping and data clustering SMEs based on education level |
| f) Could see the mapping and data clustering SMEs based on age, gender, partnership, buyers |

Non functional requirements specified in the system into two parts consisting of hardware and software needs. This Application-based client-server so that the server needs to store and manage data. The system can be accessed wherever and whenever because online-based. for the needs of software Applications using PHP as a programming language and mysql as a database management system as well as xampp as a web server.[9][10]
3. Results and Discussion
The next step in the design of the system was to design Applications. Applications have two users namely visitors (SMEs) and local governments. Figure 1 shows the main display of Applications. On the main page system, visitors can see the latest news, the local government agenda concerning SMEs, SME products, galleries, profiles of Government and others.

Figure 1. SMEs Applications main page

Figure 2 shows the page to log in for administrators Application namely local government. To do the input, update, delete and view data your users have to log in first. After a successful login will then perform the main page to the administrator. On this page, the administrator can enter the data of SMEs, SME owner data, data buyers, affiliate data organization and data news and agenda.

Figure 2. The login page for Administrators
Figure 3 shows the form to input data on a small and medium business consisting of some SMEs; year founded, location, the line of business, SME's description, the type of product sold, ownership and the buyer. While the data input form for small and medium business owners consist of the name of the owner, age, gender, education, job title, address, telephone of the owner, the owner's name and the SMEs.

![Figure 3. The page to fill in the data of SMEs](image)

After data SMEs, owners and affiliates in then enter the admin can see report plastering data based on criteria that SMEs already determined that can help local governments in conducting leveling conditions and product quality of SMEs. Report the results of clustering SMEs based on who got patronage and funding that shown in figure 4.

![Figure 4. Report the results of Clustering SMES based on who got patronage and funding](image)
Clustering based on the level of education of the owner that shows in figure 5, clustering based on business owners and upon the purchaser of the product and clustering based on the partnership of owners.

![Figure 5](image)

**Figure 5.** Report the results of clustering SMES based on who got patronage and funding

Once Applications are done the next step was doing a test run of the system are by the implemented or not. Tryout Application using the method of smoke testing is also known as build verification testing is a software testing type that aims at ensuring the most important functions in an Application is working or not.[11][12] Smoke testing will check whether the deployed the build is stable or not so with these testing problems in Applications can be handled earlier that shows in table 2.

| Id | Test Scenarios            | Description                                                                 | Test Step                                           | Expected Result                  | Actual Result                      |
|----|---------------------------|----------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------|------------------------------------|
| 1  | Home Pages perform credentials | Test the access home page of Application to ensure that the page not error or not found | Launch the link of information system using browser | The home page should be able to perform | The home page perform successfully |
|    |                           |                                                                            |                                                    |                                  |                                    |
| 2  | Valid login credentials    | Test the login functionality of the Application to ensure that administrator is allowed to login with username and password | 1. Launch the application information system         | Information system launched successfully |                                      |
|    |                           |                                                                            | 2. Navigate the login page and click on login button | Login page should be displayed with username and password fields and user should be able to get into the admin | login page loaded and Home page is Displayed successfully |
4. Conclusion

This study design Application to find out the leveling conditions and product quality of SMEs to the Government premises. In the experiment, data processing and detailed questionnaire results are already in the appropriate classification criteria in sports and stored in the system information. The design of the system is done in stages as follows with the analysis of the problem then the search solution of the problem, after analyzing the needs of the system that is functional needs as well as the non-functional requirements. The next stage, namely the design of system and application to the information after the system programming language is complete then performed a test by using a smoke testing method. The result showed that all functions in Applications running smoothly. Based on the results we can conclude that the Application is functioning correctly and by the user's expected by the local government in particular.

5. References

[1] J. Adu, P. C. Author, A. O. Mensah, and N. B. Akosah, “Small and Medium Sized Enterprises (Smes) Accessibility To Public Procurement: Smes Entity Perspective in Ghana,” Eur. J. Bus. Soc. Sci., vol. 4, no. 11, pp. 25–40, 2016.
[2] K. A. Ahmad, J. D. Segaran, F. R. Hashim, and M. T. Jusoh, “Special Issue,” 2017.
[3] P. Ueasangkomsate and A. Jangkot, “Enhancing the innovation of small and medium enterprises in food manufacturing through Triple Helix Agents,” Kasetsart J. Soc. Sci., pp. 1–9, 2018.
[4] M. Abe, M. Troilo, and O. Batsaihkan, Financing small and medium enterprises in Asia and the Pacific Masato, vol. 4, no. 1. 2015.
[5] D. Irianto, “Collaborative Manufacturing for Small-Medium Enterprises,” IOP Conf. Ser. Mater. Sci. Eng., vol. 114, no. 1, 2016.
[6] B. Leng and X. Ji, “Evaluation research of small and medium-sized enterprise informatization on big data Evaluation research of small and medium-sized enterprise informatization on big data,” 2017.
[7] U. Bin Quashem, A. M. Zeki, and A. Abubakar, “Successful Business Intelligence System for SME: An Analytical Study in Malaysia,” IOP Conf. Ser. Mater. Sci. Eng., vol. 226, no. 1, 2017.
[8] L. Newman Lior, “Chapter 2. Design and Development Models and Processes,” 2013.
[9] D. A. Almajali, R. Masa’deh, and A. Tarhini, “Antecedents of ERP systems implementation success: a study on Jordanian healthcare sector,” J. Enterp. Inf. Manag., vol. 29, no. 4, pp. 549–565, 2016.
[10] X. Li, “The Intelligent Technologies of Electronic Information System,” J. Phys. Conf. Ser., vol. 887, no. 1, 2017.
[11] L. Li-hong, “Research and implementation of software automatic test Research and implementation of software automatic test,” 2017.
[12] M. A. Rosid, A. Rachmadany, M. T. Multazam, A. B. D. Nandiyanto, A. G. Abdullah, and I. Widiaty, “Integration Telegram Bot on E-Complaint Applications in College,” IOP Conf. Ser. Mater. Sci. Eng., vol. 288, no. 1, p. 12159, 2018.