Cloud-Based Integrated Financial Application Design for MSMEs

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Abstract. This study aims to fill a research gap by exploring how Indonesian CEOs' demographic traits and management styles Abstract. Various kinds of finance and accounting applications are available freely or paid. However, many of these applications are not in accordance with the needs of MSME actors. Previous research only reviewed a few financial applications from the Play Store, and only focused on Point of Sale (POS) applications and had not integrated the functions of making financial statements and calculating BEP. The research aims to conduct a technical feasibility study related to cloud-based integrated financial applications and design these financial applications. Integration includes the function of making financial statements and the calculation function of BEP. Data collection method with FGD 10 MSME managers who are members of one of the business communities in Indonesia. The method of creating integrated financial applications uses the Rapid Application Development (RAD) approach. The results of technical feasibility show that the content agrees that the content of this application is reviewed by experts in their fields, authority of source: respondents agree that the information contained in the website is made by professionals who can be accounted for according to their fields, design: Respondents agree and strongly agree with the design of the MSME Help website have easy navigation, easy to read writing, clear MSME Help Application website pages, Accessibility and Availability of Information Respondents agree and strongly agree that this website is easily accessible, Quality of Links to Other Sources: Respondents agree and strongly agree that this website link has been reviewed, user support: disagree if the Bantu UMKM application website provides information related to parties that can be contacted and there is a suggestion box, perceived information quality: respondents agree and strongly agree if the content of information in the Bantu UMKM web application is updated, error-free and has complete data, trust: respondents agree and strongly agree that the Bantu UMKM website application link can protect user privacy data, perceived usefulness: respondents agree that this website is easy to navigate and easy to learn how to use, intention to use: Related to the intention to continue using this web application rather than the existing alternative, respondents answered neutrally. However, MSME managers agree and strongly agree to use this web-based application in the future and will recommend it after some improvements are made. The results of the application design resulted in a cloud-based integrated financial application under the name BANTU UMKM. This application integrates between the financial statement function and the BEP calculation function.

Keywords: Financial application, BEP, Cloud-based, Integrated

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Introduction

The pace of technological development is getting faster. This has brought changes in various aspects of life Sugiarti et al (2022) explained that before the existence of financial applications, the process of recording transactions and preparing financial statements was a difficult part for almost all business owners. Knowledge related to the preparation of financial statements is one of the important things. Inadequate knowledge causes financial management will not provide information about business conditions properly so that business owners are unable to make proper decisions (Thottoli, 2021). The inability to carry out good financial reporting is one of the factors that can hinder the growth of pioneered businesses, especially for Small and Medium Enterprises (SMEs) (Nkwabi &; Mboya, 2019). This is in line with (Sumarna et. al (2021) which states that the financial literacy or understanding of business owners is still low.

Currently, anyone can access accounting software. The Software can be obtained through payment or for free. Software or applications for financial recordkeeping according to Hermanto & Patmawati (2017) is a program created to facilitate accounting activities and records. All series of activities in accounting such as selling, posting to the general ledger, compiling balance sheets, and financial statements can be done through accounting programs. The existence of accounting software makes the work of an accountant fast and efficient because it can save time working on financial statements. Yudantara, Putra, and Musmini (2021) stated that the application of computerized accounting processes is more efficient than manually. Thottoli (2021) said that the use of accounting applications can produce accurate financial statements quickly. This will certainly provide better financial information. Supardianto, Ferdiana & Sulistyo (2019) mentioned an example of using a financial application that makes it easy for MSME actors to carry out the financial recording process is the Financial Information Recording Application System (SiApik). Based on the observations of SiApik software researchers, they have been able to perform ratio analysis but have not been equipped with BEP calculations. Previous research has mostly made applications that are separate between various functions.

Research on this topic is not the first. Ferdiana &; Sulistyo (2019), examined the use of technology as part of digital transformation such as paperless accounting. Supardianto, Ferdiana &; Sulistyo (2021) related to the design of tax applications for making Final Income Tax for reporting Corporate Annual Tax Returns. Research by conducting a comparative analysis of mobile-based accounting applications for MSMEs has been examined by Putri.et.al (2023). The difference between this research and previous research is that this research is a development of research that has been carried out by Putri.et.al (2023) and Supardianto, Ferdiana & Sulistyo (2019). One of the results of Putri.et.al (2023) provides information that MSMEs need integrated financial applications. This research seeks to fill the gap from several previous studies by creating an integrated financial application. The purpose of creating an integrated financial application is to make it easier for MSME players to carry out two functions in one application. The first function is the accounting function to carry out the journaling process to the preparation of financial statements, then the second function is the management function to analyze sales planning through BEP calculations. This research will also conduct feasibility studies related to technical feasibility. This research is collaborative research of two fields of science, namely Informatics Engineering and Accounting. The results of this study are expected to provide practical benefits in the form of cloudbased integrated financial applications that can be used by MSMEs to manage their financial transactions.

Literature Review

Research related to application development has been researched by several previous researchers, Supardianto, Ferdiana & Sulistyo (2019) found that numerous startups in the Yogyakarta region have embraced technology for financial management, integrating it into their digital transformation by adopting paperless accounting and digitizing paperwork that was once manually processed, including tasks like creating invoices and maintaining records. Numerous new businesses utilize applications based on cloud technology. Over half of startups in financial governance use internet-based apps or cloud computing. Startups are using an application that only records transactions, but none of them have utilized tax applications. Furthermore, Supardianto, Ferdiana & Sulistyo (2021) designed tax applications from recording transactions, calculating gross circulation

every month and year, and assisting in taxation and administration, such as calculating Final Income Tax according to Government Regulation No. 23 of 2018 and making reports as supporting documents for the Agency's Annual Tax Return report. The application also successfully displays the output of the Final Income Tax attachment which can be used for reporting the Agency's Annual Tax Return. Another important thing after making financial and tax statements is that companies can calculate BEP. Supardianto, Ferdiana &; Sulistyo (2021) explained how companies can make a profit and not experience losses, namely by conducting a sales planning analysis, one of which is using Break Even Point (BEP).

This study has progressed through multiple phases to reach its present state. Starting from conducting an independent review of accounting applications found on the google play store where good POS application results are obtained by MSMEs, one of which is a warung book (Putri, 2023). The next stage of the research team has also reviewed the application through interviews with several MSME actors to find out the needs of MSMEs related to financial applications. From the results of interviews with MSME actors, it was found that MSMEs still use Excel applications to make their financial statements, the business recording process is still separate, the data input has not been integrated directly with the financial statements and finally the data is not real time. Furthermore, MSME actors are also constrained by the accounting language used in the available POS applications. There are even MSME players who state that in addition to using free applications from Google Play, they still use third parties to make their financial reports. This is done because the free application available is only POS (Point of Sales) which only summarizes income and expenses without reaching financial statements. MSME players also complain about the difficulty of finding suitable financial applications due to different types of businesses and sectors in general. After conducting a general analysis of MSME actors, it is very clear that they need financial applications seen from their performance, one of which is integrated. Integrated definition is that the data inputted can be directly linked to the preparation of financial statements, and BEP calculations.

Research Methods

The research method conducted to achieve the objectives of this study conducted a feasibility study

using survey techniques through FGD and questionnaire distribution to 10 MSMEs included in the business community in Indonesia. The reason for choosing these MSMEs is because these 10 MSMEs are included in communities that are quite active in managing their MSMEs. The research questionnaire was adapted from (Boon-itt, 2019). The technique used for the creation of its application uses the RAD method. Here are 10 MSMEs respondents to the study:

Table 1. Research respondent data

MSME business sector Trading Business 1 Sportswear Service Business 3 Expedition services, Construction services and Haircut services Manufacturing Business 5 Food culinary Position in MSME business 5 Food culinary Business Owner 9 employee 1 Business Owner 9 employees 1 1 to 10 persons 4 1 1/up to 20 persons 3 21 to 30 persons 3 2 1 26-30 2 20-25 1 26-30 2 2 2 21-35 4 36-40 1 >40 2 24-0 2 2 1 1-3 3 4-6 4 7-9 1 10-12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12 1 >12	Criterion	Sum	Information
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	>12	1	

Conduct feasibility study of cloud-based integrated financial applications

Arvanitis and Estevez (2018) elaborate on how a feasibility study involves analyzing and evaluating a business idea or project to assess its technical viability, cost feasibility, and potential profitability. The study utilized the 'TELOS' model for feasibility analysis, which includes Technical, Economic, Legal, Operational, and Schedule aspects.

Technical feasibility involves recognizing possible technical hurdles and issues that the system might encounter, in line with business requirements and goals.

Feasibility in terms of economics involves presenting the financial aspect of a suggested project to a company. In order to determine whether the system is cost-effective. Are the advantages greater than the disadvantages? Legal feasibility involves checking for any inconsistencies between the proposed system and legal standards.

Operational: assessing if existing methods and job needs are sufficient to back up the new system. Feasibility studies are conducted only on technical feasibility related to technical web-based financial applications.

Design cloud-based integrated financial applications and produce prototypes

Rapid application development (RAD) is an approach that emphasizes the fast creation of applications by incorporating frequent iterations and feedback. RAD was introduced by IBM in the 1980s to 1990s due to the rising need for applications. Given the high level of demand, individuals working in the field of information technology need to come up with solutions to fulfill this demand. According to Rosa (2022), RAD is a software development life cycle model designed for quick development periods. Developing a functional system quickly is known as the process of creating a workable system in a very brief period of time (Laudon, 2022).



Sumber: Kendall (2010)

The following are the stages of application development from each phase of application development. The first stage is Requirements Planning, in this phase, users and analysts meet to identify the objectives of the application or system and to identify the information requirements arising from those objectives. The orientation in this phase is to solve the problems of the company. Although information technology and systems may direct some of the proposed systems, the focus will always remain on achieving the company's goals. The second stage is RAD Design Workshop (RAD Design Workshop), this phase is the phase for designing and improving which can be described as a workshop. Analyzers and and programmers build and show users visual representations of designs and work patterns. During the RAD design workshop, the user responds to the prototype and the analyst refines the modules designed based on the user's response. The third stage is Implementation, in this implementation phase, the analyst works with users intensely during workshops and designs the business and non-technical aspects of the company. As soon as these aspects are approved and systems are built and screened, new systems or parts of the system are tested and then introduced to the organization. In 2023, the application development stage will reach the stage of designing and integrating transaction recording functions to produce financial statements and functions for BEP calculations and conduct testing in a small scope, namely to 10 MSME participants.

Results and Discussions

Results of feasibility of technical studies related to cloud-based integrated financial applications

Technically, a web-based financial application with the name Bantu UMKM was assessed by the criteria of the website by the research respondents. The following are the results of the assessment: 1. Content of sites (CO) (Konten dari Website)



Fig. 2. Content of Site (CO)

Based on Fig. 2 most respondents agree that the content of this application is reviewed by experts in their fields, the appearance of the website is error-free, and the information contained on the website is presented in a balanced format. The content is according to the audience. The following is input from MSME managers related to content of site:

For the prototype stage is good, it is necessary to develop more Acc features. The display is quite good, only need training if you can get real examples. The content is good enough and according to the purpose of the design. Simple look easy to digest minimize English. The use of the word quantity is changed to nominal. There is an edit option but only the owner can access. The hope is that there will be training for admins to understand the content of this application

2. Authority of source (AU) (Sources are made by people who are experts in their field)

Regarding the authority of source (AU), respondents agree that the information contained in the website is made by professionals who can be accounted for according to their fields. The following is support related to the statement:

The maker is a lecturer accounting website made quite well by designers. It is already good for the prototype stage. It has been made by people who are experts in their fields. Making applications must be compatible with applications outside those that have been widely used for the best benchmarking. Made simpler for easyto-understand language, more simplified applications. Experts who make Capable in their fields (management of MSME managers).

Details are in the following figure:



Fig. 3. Authority of source (AU)

3. Desain

The results of the assessment related to design showed that respondents agreed with the design of the MSME auxiliary website has easy navigation, easy to read writing, the MSME auxiliary application website page is clear. Details of the results are shown in Fig. 4:



Fig. 4. Desain

Additional statements that corroborate these results are:

It is simple to add appearance settings such as font size. For novice MSME players, it still needs to be tested. The design is already good. Need to prepare your own report to facilitate the calculation of property tax and add report graphics to make it easy to read the yearly budgeting report plan report. The design is simpler and easier to understand. The interface on the smart phone is not yet suitable for some menus. The provision of different transaction colors (input data) Website Design is quite good.

4. Accessibility and availability of information (AC)



Fig. 4. Accessibility and availability of information (AC)

Respondents agree and strongly agree that this website is easily accessible and can be used for free while accessing the MSME Auxiliary Application version one. The following are the statements of MSME management colleagues:

Easy to download or get. Ease of access. If you forget your password, you are given a menu to log in. It's ok for the beginner stage. It's good enough.





Fig. 5. Quality of links to other sources (QS)

The graph shows the quality of website links against other sources. This is supported by the statement of MSME managers: respondents agree and strongly agree that this website link has been reviewed.

The link has been well reviewed. Good. It is still in the experimental phase so the link is still not available. There is no agreement warning when or after logging in, make it look better, you should have a link to tax. It's good enough.

6. User support (US)



Fig. 6. User support (US)

Based on Fig. 7, it can be seen that MSME managers and owners agree that if the Bantu UMKM application website provides information related to parties that can be contacted and there is an input suggestion box for improvements on the web, it means that the Help MSME website needs to create information related to support technicians who can be contacted if at any time there are problems during web implementation. The following is input from MSME managers related to User Support:

It needs a lot of added features, one of which is the post integration. It already exists, but it is not active yet. You can add an email or phone number. There is already an information center. Provide reminders on each dashboard, so that they are easily accessible. Is there an online WA/Chat/Phone service? Customer service in every window*Name/IT Support If there are problems or not. No CP for info yet. It already exists but cannot be accessed yet. Please change the active CS option. It already exists but is not yet accessible. There is already a live activated.

7. Perceived information quality (PQ)



Fig. 7. Perceived information quality (PQ)

Regarding the quality of perception information, respondents agree and strongly agree if the information content in the Bantu UMKM web application is updated, error-free and has complete data related to financial reporting and BEP calculations. This is reinforced by respondents' statements:

For the information is enough for beginners. Information is enough, just need understanding. The data information is clear and neat. This database can be stored for how long. If you don't use this service, where is it saved? Many features need to be added +/- or edit data. It's been good.

8. Trust (TR) (Trust)



Respondents agreed that the Bantu UMKM website application link could protect user privacy data. This means that MSME respondents believe in this website. Some MSME managers state that the data processed in the Bantu UMKM application web is very confidential and important data so that it must be

MSME managers: Privacy because financial statements are very confidential, providers must be able to guarantee the confidentiality of MSME data. Readiness of the IT team if there is a disruption in sending data. What about viruses. Server. Data and information on the website are well maintained. Trusted

able to convince MSMEs that their confidential data is

safe. The following are statements from several

9. Perceived usefulness (PU) (Perceptual Use)



Fig. 9. Perceived usefulness (PU)

Fig.9. indicates that respondents agree that the website is easy to navigate and easy to learn how to use and easy to follow instructions. The following is additional input from MSME managers:

That's enough. Easy to use, easy to understand, easy to operate. There is provided how to use / institution at home and dashboard. Pretty easy to learn. Difficult beginner stage.

10. Intention to use (IT)



Fig. 10. Intention to use (IT)

Intention to use the Web application Help MSMEs respondents agreed to use this web-based application in the future and half of respondents stated that they would recommend this website to others. With regard to the intention of continuing to use this web application rather than the existing alternatives, respondents answered neutrally. This is because they only use this web application for some time. And there are still many inputs and additional functions so that this web application can be used optimally. This result is reinforced by respondents' statements stating that

For now, not because many accounting features are not yet live, can not be recommended but after some improvements will be recommended. The need for a free trial maybe 3-6 months can confirm whether it can be recommended with others as a comparison. We are interested in using it (MSME Manager)

Cloud-Based Integrated Financial Application Prototype

Users who will use the application must go through the login page first, if the user does not have an account, then they can register through the Registration menu.



Fig. 11. Login display of the MSME Help Application

ashl	board				
Hom	e > Dashboard				
Pe	ncatatan Transaksi				
Catata	an Transaksi				
Ex: I	Pengambilan uang di ATM				
Tangg	gal Transaksi				
dd/	'mm/yyyy				
Bukti	Transaksi				
Bukti	Transaksi Noose File No file chosen				
Bukti Cl Tipe file	Transaksi 1005E File No file chosen e yang diijinkan: jpg, png, dan pdf				
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Fig. 12. Display of transaction recording

Fig.12. Users can add transaction records on the transaction page. The results of adding this transaction will be automatically recorded into the journal in the following figure:

Nama Usaha Satuan Mata Uang Periode	klik23 (Rp) (01 Jan 2023 -	26-Jan-2024)		
Tanggal Transaksi	Bukti Transaksi	Nama Akun	Debit	Kredit
22 Juni 2021	Dapat Hibah ® bukti	Kas Bank	15.000.000	
		Hibah Diksi Kemendikbud		15.000.000
24 Juni 2021	Pengambilan Uang di ATM ® bukti	Kas Di Tangan	3.000.000	
		Kas Bank		3.000.000
25 Juni 2021	Membeli bahan ® bukti	Mesin dan Peralatan	6.000.000	
		Kas Di Tangan		2.000.000
		Utang Usaha		4.000.000
26 Juni 2021	Beli Bahan	Persediaan Bahan		1.000.000
		Utang Usaha		1 000 000

Fig. 13. Journal page display

The journal page displays transaction records in the form of journals derived from recording transactions. Furthermore, after the journaling process, the next stage if we use a manual system is to post it into the general ledger of each account that has been journaled. But in this application for General ledger has been created automatically. The General Ledger display results are in Fig. 14:

BUKU B	ESAR				
Nama Usaha Satuan Mata Ua Periode	klik23 i ng (Rp) (1 Januari 2023 - 26	i-Jan-2024)			
11 Kas Banl	ĸ				
Tanggal	Keterangan	Debit	Kredit	Saldo	D/K
2021-06-22	Dapat Hibah	15.000.000		15.000.000	D
2021-06-24	Pengambilan Uang di ATM		3.000.000	12.000.000	D
12 Kas Di Ta	angan				
Tanggal	Keterangan	Debit	Kredit	Saldo	D/K
2021-06-24	Pengambilan Uang di ATM	3.000.000		3.000.000	D
2021-06-25	Membeli bahan		2.000.000	1.000.000	D
2021-06-28	Penjualan usaha	500.000		1.500.000	D
2023-09-11	Persediaan bahan		500.000	1.000.000	D

Fig. 14. General ledger page views

Nama Usaha Satuan Mata Periode	klik23 Uang (Rp) (01 Jan 2023 - 26-Jan-2024)		<i>klik</i> duatiga
No Akun	Nama Akun	Debit	Kredit
11	Kas Bank	12.000.000	
12	Kas Di Tangan	1.000.000	
13	Piutang Usaha	1.000.000	
14	Persediaan Bahan	2.500.000	
15	Sewa Dibayar Dimuka	0	
16	Mesin dan Peralatan	6.000.000	
17	Akumulasi Penyusutan Mesin dan Peralatan		0
18	Asset Tetap Lain-Lain	0	
21	Utang Usaha		5.000.000
22			

Fig.15. Balance list page view

Fig.15. displays an image of the Balance List. The summation of balances from the general ledger has been captured automatically and presented on the Balance List Page or commonly known as the Balance Sheet

get omset dan net profit us ian et Kenaikan Penjualan (%) et Jumlah Unit Penjualan (Unit) P	Bulan 1 0% 100 unit	a 6 bulan Bulan 2 20% 120 unit	Bulan 3 20% 144 unit	Bulan 4 20% 173 unit	Bulan 5 20% 208 unit	Bulan 6 20% 249 unit
ian et Kenaikan Penjualan (%) et Jumlah Unit Penjualan (Unit) P	Bulan 1 0% 100 unit	Bulan 2 20% 120 unit	Bulan 3 20% 144 unit	Bulan 4 20% 173 unit	Bulan 5 20% 208 unit	Bulan 6 20% 249 unit
et Kenaikan Penjualan (%) et Jumlah Unit Penjualan (Unit) P	0% 100 unit	20% 120 unit	20% 144 unit	20% 173 unit	20% 208 unit	20% 249 unit
et Jumlah Unit Penjualan (Unit) P	100 unit	120 unit	144 unit	173 unit	208 unit	249 unit
p						
P						
Rincian						Jumlah
Biaya Tetap						4.500.000
Biaya Variable per Unit						127.000
Harga Jual Perunit						190.500
BEP Perunit						71
BEP Penjualan					1	3.500.000
	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Perunit BEP Penjualan	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Perunit BEP Penjualan	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Perunit BEP Penjualan	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Perunit BEP Penjualan	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Penjualan	Biaya Tetap Biaya Variable per Unit Harga Jual Perunit BEP Penjualan 2

Fig.16. BEP page view

One of the final results of recording results and features in the application is calculating BEP. BEP or break-even point is very important for management. This is in line with (Alnasser et al., 2014) which states that companies should use the break-even point as the main tool of decision making and planning supervision, efficiency and accuracy in rationalization and control of decisions.

Conclusions

The results of technical feasibility show that the content agrees that the content of this application is reviewed by experts in their fields, authority of source: respondents agree that the information contained in the website is made by professionals who can be accounted for according to their fields, design: Respondents agree and strongly agree with the design of the MSME Help Website has easy navigation, easy to read writing, clear MSME Auxiliary Application website pages, Accessibility and Availability of Information Respondents agree and strongly agree that this website is easily accessible, Quality of Links to Other Sources: Respondents agree and strongly agree that this website link has been reviewed, User Support: disagree if the Bantu UMKM application website provides information related to parties that can be contacted and there is a suggestion box, perceived information quality: respondents agree and strongly agree if the content of information in the Bantu UMKM web application is updated, error-free and has complete data, trust: respondents agree and strongly agree that the Bantu UMKM website application link can protect user privacy data, perceived usefulness: respondents agree that this website is easy to navigate and easy to learn how to use, intention to use: Related to the intention to continue using this web application rather than the existing alternative, respondents answered neutrally. However, MSME managers agree and strongly agree to use this web-based application in the future and will recommend it after some improvements are made. The results of the application design resulted in a cloudbased integrated financial application under the name BANTU UMKM. This application integrates between the financial statement function and the BEP calculation function.

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