Evaluation of the Implementation of 'SIPS-MUDA' School Payment Information System

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Article Information	Abstract
	Globalisation has a significant influence on the world of education. The emergence of technology supports the implementation of services in providing school financial accountability through a digital payment information system. Therefore, this research aims to review the effectiveness and efficiency of the application of SIPS-MUDA in providing payment information using a case study with a mixed-method approach. Data was collected through interviews, observations, documentation, and surveys. Meanwhile, the data were analysed using John Cresswell's model analysis technique. The results showed that the school payment information system effectively controlled misinformation and omission of human error factors related to the data. A survey of 46 parents also indicated that more than 80% agreed on the effectiveness and efficiency of the implementation of SIPS-MUDA. This was based on the validity of payment information, task completion, time behaviour, and customer satisfaction. In conclusion, the application of SIPS-MUDA can be categorised as very effective in providing school payment information services. Virtual accounts are a recommendation for manual input constraints, and schools can utilise bank CSR funds in cooperation.
	Abstrak. *Globalisasi membawa pengaruh signifikan termasuk dalam dunia pendidikan. Kemunculan teknologi mendukung penyelenggaraan pelayanan Pendidikan, salah satunya dalam menyuguhkan akuntabilitas keuangan sekolah melalui sistem informasi pembayaran sekolah digital. Artikel ini bertujuan untuk meninjau efektivitas dan efisiensi penerapan SIPS-MUDA dalam memberikan informasi pembayaran. Penelitian ini merupakan studi kasus menggunakan pendekatan mix method. Pengumpulan data dilakukan melalui wawancara, observasi, dokumentasi, dan survey. Teknik pemaparan data secara deskriptif. Data dianalisis menggunakan Teknik analisis data model John Cresswell. Hasil penelitian menunjukkan bahwa pemanfaatan sistem informasi pembayaran sekolah efektif dalam mengatasi kesalahan informasi dan kelalaian faktor human error terkait data pembayaran sekolah. Hasil survey terhadap 46 orang tua juga menunjukkan bahwa lebih dari 80% menyatakan setuju terhadap efektifitas dan efisiensi penerapan SIPS-MUDA berdasar pada dimensi validitas informasi pembayaran, task completion, time behaviour, dan kepuasan pelanggan. Kesimpulannya penerapan SIPS-MUDA dapat dikategorikan sangat efektif dalam memberikan pelayanan informasi pembayaran sekolah. Penggunaan virtual account menjadi rekomendasi atas kendala input manual. Sekolah mampu memanfaatkan dana CSR bank dalam Kerjasama.*

INTRODUCTION

Globalisation brings dynamic technological developments to Indonesia, including improving the quality of the education sector (Raja & Nagasubramani, 2018) as the resulting technology can provide convenience in the management of education (Ahmad & Ogunsola, 2011; Fathi, Fontes, Urenda Moris, & Ghobakhloo, 2018; Fathurrochman, Ristianti, & Arif, 2019). In the era of disruption, school information management can be managed more efficiently with high access through website-based information systems (La Ija, Aris Susanto, & La Ode Bakrim, 2021) and the like. The growing Islamic education should be able to answer the challenges of technology-based management through information systems (Assa'idi, 2021; Hanafi et al., 2021).

In Indonesia, there is much development research in the design of school payment information systems. Most research is on the development of web-based systems with various programming languages, including Java (Ashari, 2014), PHP (Habib & Kindhi, 2018);(Darmawan, Purnama, & Estiyanti, 2021); Web and H5 Scheme (Yang & Wen, 2020), and also MySQL database server. Apart from being web-based, there is also research on designing a school payment information system via the *Android* smartphone (Hariani, Sari, & Batubara, 2021). Payment information system development designs have also emerged in various schools based on several studies (Erinawati, 2013); (Nurdianawati & Lestari, 2021); (Damayanti & Sulistiani, 2017); (Oscar, Maulana, & Haidir, 2019). Even some developers have designed a virtual account-based payment system design (Munawar, 2022). However, the many methods of school payment information systems that have been developed are not directly proportional to their implementation. Not many schools are ready to implement a school payment information system. So we need a study to see the performance and effectiveness of applying payment information systems in schools.

The application of information systems in Education is also one of the efforts to achieve Total Quality Management (TQM). TQM in Education demands the school's open service to the community. This requirement refers to the five points of TQM, including 1) Quality Assurance, 2) Continuous Improvement, 3) Change of Culture, 4) Upside-down Organization, and 5) Keeping Close to the Customer(Annisa, Akrim, & Manurung, 2020; Fonseca, Amaral, & Oliveira, 2021; Sallis, 2012). To stay close to customers, in this case, the community, schools must be able to answer community requests, especially regarding accountability.

The utilisation of financial management information systems is essential and crucial. In 'PP RI No 48 of 2008 concerning 'Education Funding', the management of education funding, especially in the form of education donations, must be recorded and accounted for on the principle of transparency (Arnold, Söbke, & Reichelt, 2019; Cook, 2021). Meanwhile, conventional financial management can cause financial problems due to human error. School financial management that meets the principles of transparency and accountability can increase public trust in institutions (Trisnawati, 2019), especially in the era of Total Quality Management.

Responding to this challenge, SMP Muhammadiyah 2 Inovasi Malang implements SIPS-MUDA. SIPS-MUDA is a school payment information system to improve school payments' performance, transparency, and accountability. It is based on the human error factor that often occurs in conventional and manual school payment management. Prices are often not recorded, resulting in many complaints and can reduce public confidence in the school. Through SIPS-MUDA SMP Muhammadiyah 2, Inovasi Malang implements a school payment information system so that payments are recorded in an orderly manner. This study aims to describe the

implementation of the SIPS-MUDA school payment information system and evaluate its effectiveness and efficiency.

RESEARCH METHOD

This study uses a mixed-method approach with descriptive data presentation techniques. The data in this study consisted of two kinds, namely qualitative data and quantitative data. Qualitative data is the result of the utterances and activities of the main and supporting informants as well as related documents in the application of the SIPS-MUDA school payment information system at SMP Muhammadiyah 2 Inovasi Malang. Quantitative data in the form of numbers that describe the number or percentage of criteria for the effectiveness and efficiency of applying the SIPS-MUDA school payment information system at SMP Muhammadiyah 2 Inovasi Malang. This method is based on the need for research data to determine the effectiveness of SIPS-MUDA implementation in payment data input. The resulting information is viewed from the customer's point of view.

Data was collected through interviews, observations, documentation, and surveys. Interviews were conducted with the principal, treasurer as the primary account holder, and parents. Statements and documentation were carried out to determine the process of implementing the school payment information system. The survey was given to parents of students to respond to the effectiveness and efficiency of implementing the school payment information system. The indicators used include validity, task completion, time behaviour, and consumer satisfaction. Measurement of the effectiveness of the use of payment information systems refers to the Ministry of Home Affairs Research and Development standards, as shown in Table 1 (Ningrum, 2014):

Table 1. MoHA's R&D Effectiveness Standards

Effectivity Ratio	Achievement Level
Under 40	Very ineffective
40-59.99	ineffective
60-79.99	Effective enough
Up to 80	Very effective

The data were analysed through John W. Creswell's model: 1) primary and supporting data collection. 2) Reading data through making (memoing) to reflect answers to research problems. 3) Displaying data through data classification and analysis based on context and data categories. 4) Representation and visualisation of data through conclusions that can be realised in charts, matrices, or tables to compile research propositions.

RESULT AND DISCUSSION
Result
Implementation of the 'SIPS-MUDA' School Payment Information System

The SIPS MUDA school payment information system accommodates tuition fees, alum arrears, and donors. SMP Muhammadiyah 2 Innovation Malang has implemented SIPS-MUDA for two years. The school payment information system aims to reduce parental complaints about recording errors or not recording the payment process. Before using the SIPS-MUDA application, schools received complaints about recording payments once every two weeks from several parents. Complaints occur due to human error in recording or parents who do not confirm charges. After

using the SIPS-MUDA application, the cases of payment recording complaints decreased drastically. Only one or two people related to technical errors.

The making of the SIPS-MUDA application at SMP Muhammadiyah 2 Innovation Malang is carried out by competent internal employees so that they can minimise high costs in purchasing applications. Before being implemented, the making of the application system was tested using black box testing. Based on black box testing, the application successfully carries out all its functions properly. The preparation of the SIPS-MUDA application is illustrated in figure 1. Figure 1 explains the construction process of the SIPS-MUDA payment information system, including input (needs analysis and application design), process (system testing), and decision, namely, deciding to use the system.

Figure 1. Payment Information System Construction Scheme
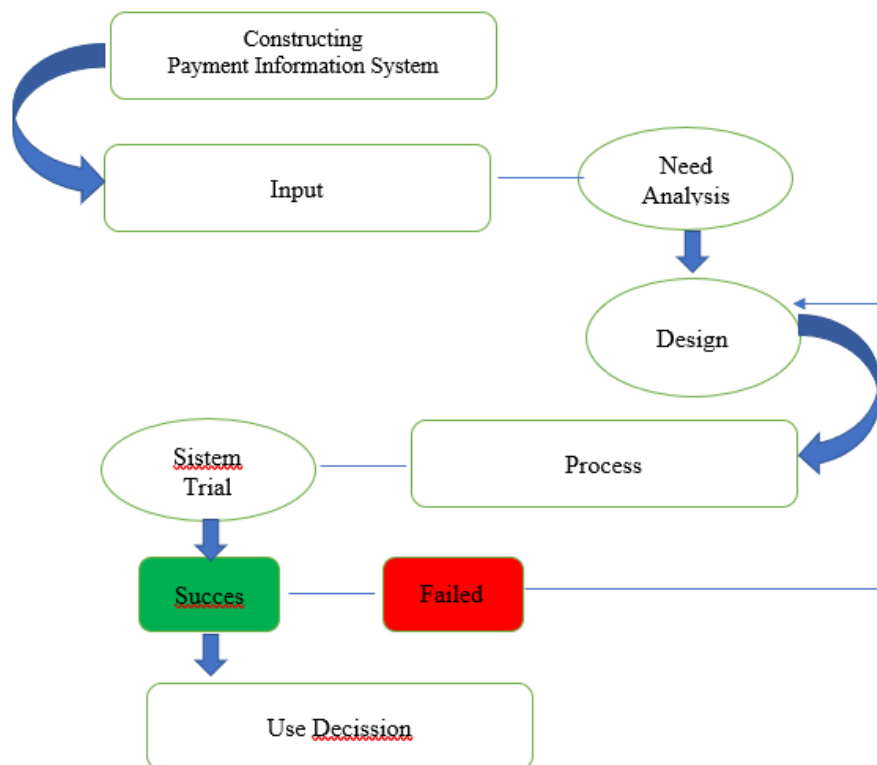
The needs analysis includes what payments will be covered by SIPS-MUDA, who the users are, what the specifications are, and what functions are needed. The developer makes an application design by analysing the collected needs by creating a state chart diagram. After the application design is made, it is tested through black box testing. The results of the black box testing were successful, so the school decided to be ready to use the SIPS-MUDA application.

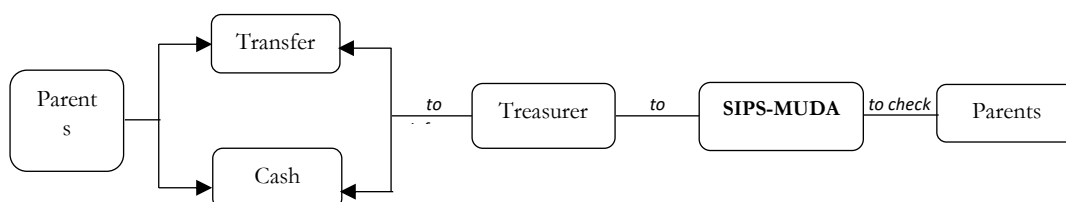**Figure 2**. Implementation SIPS-MUDA Scheme

Figure 2 shows an implementation of SIPS-MUDA as a management application for school payment information. Parents of students make payments by transfer or cash. After making the payment, the parents confirm with the treasurer. Cash payments confirm on the spot, while transfer payments send proof of transfer via the school's WhatsApp number. The school provides a particular cellphone to receive payment confirmations so that reports are not piled up. It is done to anticipate the accumulation of messages, so they are not recorded.

Treasurer manages payment data in SIPS-MUDA based on payment confirmation. The treasurer also prints out proof of payment and sends it to the parents. Parents can also do self-checks through their respective accounts using each child's Student Identification Number. Parents can confirm whether their bills have been recorded in full or not. Through the direct monitoring system, parents can immediately check with the school if there is a discrepancy in the data. This practice is also said to implement the principle of accountability for school payment information.

The use of SIPS-MUDA can reduce protracted complaints from parents. If there is no direct checking system, the parents will know the payment status when taking study results every semester. If an error is found in recording payments, the school will also find it difficult to trace the payment history because some time has passed. Meanwhile, through the implementation of a payment information system, parents can access their payment history at any time. If there is an error in the recording, parents can make a complaint and confirm as soon as possible so that the case can be resolved immediately.

Although effective in overcoming complaints due to the omission of payment information, SIPS-MUDA still demands that the treasurer input data manually. It is one of the weaknesses in the input process that the school feels. This condition results in some inputs received by the treasurer outside working hours that cannot be inputted in real-time. The use of virtual accounts is one of the alternatives initiated by schools. However, using virtual accounts has not been realised because schools have to pay a certain amount to buy virtual accounts for each student. After thoroughly reviewing the school's finances, the school decided to suspend the use of virtual funds.

Effectiveness, Efficiency, and User Satisfaction with SIPS-MUDA

The application of SIPS-MUDA can be said to be 90% able to reduce cases of human error in recording payments. It is because the problem many found before the SIPS-MUDA application was the occurrence of misunderstandings between the treasurer and parents. Misunderstanding occurs when parents forget and do not confirm with the treasurer after making the payment. The treasurer will not record the cost if the parents do not guarantee the price. This case makes the bills that parents have paid remain in arrears.

After SIPS-MUDA socialisation and payment confirmation, parents routinely confirm payments through the school treasurer. The school provides a particular cellphone to receive payment confirmations so that messages are not piled up. The success of SIPS-MUDA in overcoming human error can be verified by the lack of parental protests regarding recording payment information. Parents can monitor payment data at any time in real time. The effectiveness of the implementation of SIPS-MUDA is supported by the results of a survey conducted on 46 parent respondents as follows:

Diagram 1. Respondent Percentage
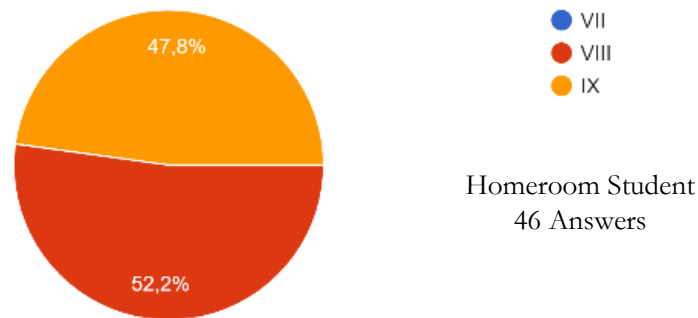
source: Google forms

This survey was conducted on 46 respondents consisting of 52.2% (24 respondents) of class VIII parents and 47.8% (22 respondents) of class IX parents. There were no seventh-grade parent respondents because this survey was conducted during the transition period of the school year, so there were no VII grade parents at school.

Payment Information Validity
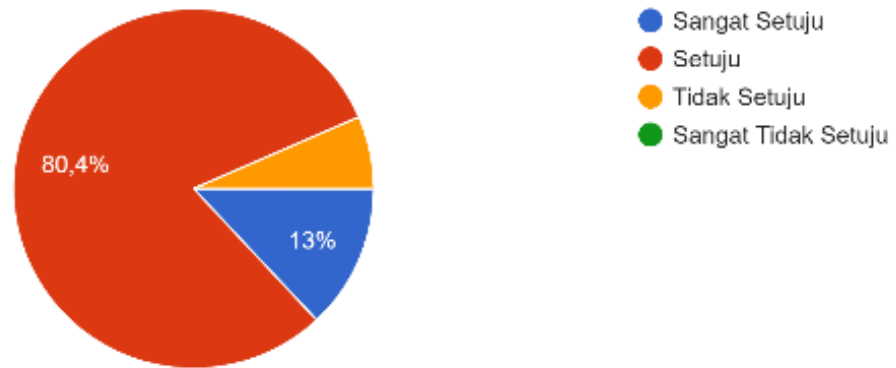
Diagram 2. Valid Payment Information
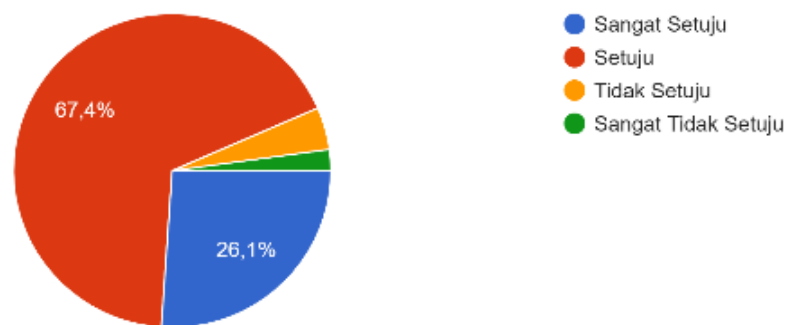
I get payment information in my account validly: 46 Answers
source: Google forms

Diagram 2 shows that of 46 respondents, 26.1% (12 respondents) strongly agreed, 67.4% (31 respondents) agreed, 4.3% (2 respondents) disagreed, and 2.2% (1 respondent) strongly don't agree. The percentage shows that more than 80% of respondents agree that the information they obtain through the account is valid.

Diagram 3. Valid Payment Information Report

The payment information I received is never wrong: 46 Answers
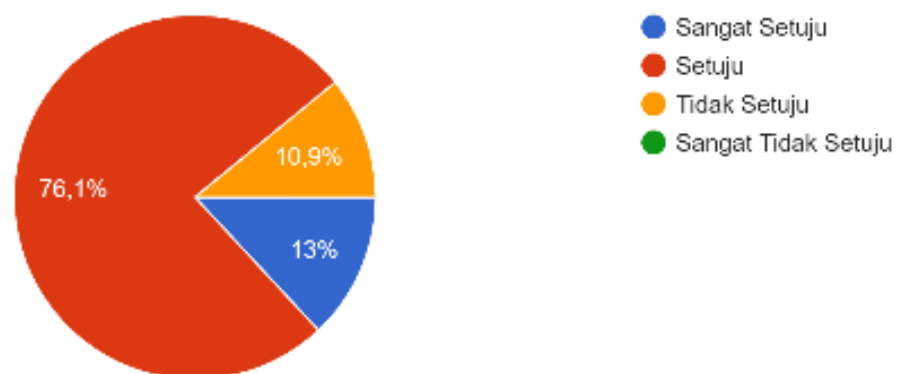

source: Google forms

Diagram 3 shows that out of 46 respondents, 13% (6 respondents) strongly agree, 80.4% (37 respondents) agree, and 6.5% (3 respondents) disagree. The percentage shows that more than 80% of respondents agree that the payment information in their account is never wrong.

Task Completion

Diagram 4. Real-time Payment Information

I can access payment information through the account on the same day when making a payment: 46 Answers

source: Google forms

Diagram 4 shows that of 46 respondents, 13% (6 respondents) strongly agree, 76.1% (35 respondents) agree, and 10.9% (5 respondents) disagree. The percentage shows that more than 80% of respondents agree that payment information can be accessed on the same day.

Time Behaviour

Diagram 5. Processing Time to Access Information

Sistem informasi 'SPP-MUDA' dapat saya akses dengan durasi pemrosesan sebagai berikut:
46 jawaban

- 1-10 menit
- 10-20 menit
- 20-30 menit
- lebih dari 30 menit
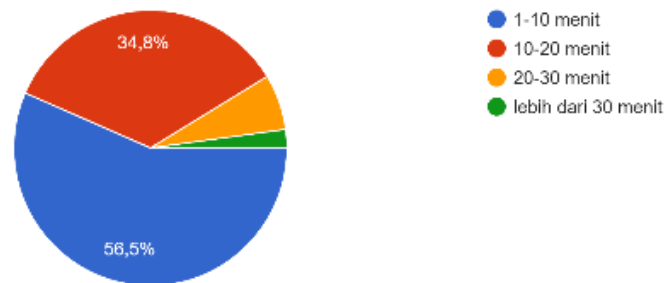
source: Google forms

Diagram 5 shows that from 46 respondents, 56.5% (26 respondents) stated that the processing duration was between 1-10 minutes, 34.8% (16 respondents) said that the processing duration was between 10-20 minutes, 6.5% (3 respondents) stated processing duration between 20-30 minutes and 2.2% (1 respondent) said processing duration was more than 30 minutes. The percentage shows that more than 80% of respondents stated that the processing time to access information was no more than 20 minutes.

Consumer Satisfaction

Diagram 6. Consumer Satisfaction With Service Quality

Penggunaan sistem informasi pembayaran meningkatkan kualitas pelayanan sekolah dalam memberikan informasi pembayaran
46 jawaban

- Sangat Setuju
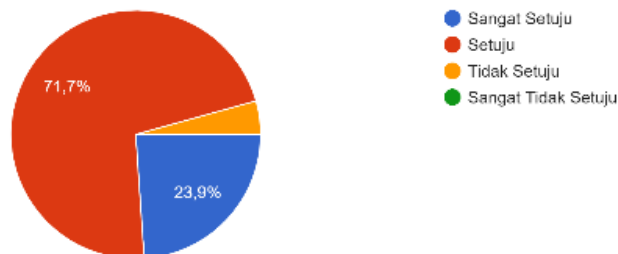- Setuju
- Tidak Setuju
- Sangat Tidak Setuju
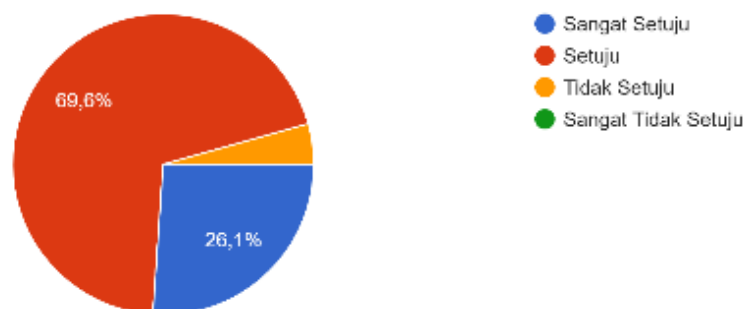
source: Google forms

Diagram 6 shows that out of 46 respondents, 26.1% (12 respondents) strongly agreed, 69.6% (32 respondents) agreed, and 4.3% (2 respondents) disagreed. The percentage shows that more than 80% of respondents agree that the payment information system improves the quality of school services in providing payment information.

Diagram 7. Increased Trust

Penggunaan sistem informasi pembayaran meningkatkan kepercayaan saya terhadap sekolah
46 jawaban

- Sangat Setuju
- Setuju
- Tidak Setuju
- Sangat Tidak Setuju

71,7%

23,9%

source: Google forms

Diagram 7 shows that of 46 respondents, 23.9% (11 respondents) strongly agreed, 71.7% (33 respondents) agreed, and 4.3% (2 respondents) disagreed. The percentage shows that more than 80% of respondents agree that payment information systems increase school trust.

Discussion

The use of technology in education is beneficial in realising the acceleration of quality achievement. One of the uses of technology in education is creating an up-to-date payment information system. The background of the problem in school payment information is a classic conversation and does not end in a solution (Dias, Scavarda, Silveira, Scavarda, & Kondamareddy, 2021; Farma, Okra, & Derta, 2020; González-Calatayud, Prendes-Espinosa, & Roig-Vila, 2021; Kalogiannakis, Papadakis, & Zourmpakis, 2021). The common problem is that the payment reports are out of sync caused of the negligence of the individual in charge of recording payments, the treasurer, or administrative staff due to the manual system; this problem is often found in various Indonesian schools (Lenniawati & Anastasia, 2021; Rakasiwi & Kusumo, 2021). Negligence can also occur to customers due to the loss of proof of payment, so the treasurer cannot track if the SPP payment data is out of sync. This problem will cause controversy and even distrust among the parents toward the school. The school's image will likely deteriorate further if this continues without resolution. So one of the efforts to build parental trust is through excellent service (Puspitasari, 2019) in providing accountable payment information.

In realising healthy school financial management, in the implementation of registration, payments, services, and various other needs, it can be developed in an integrated web feature (Siregar, Harahap, Munandar, Parlaungan, & Triyanto, 2021). The world declares that the quality of education is not only input-process-output but a support system in maximising the educational process, which includes an advanced system based on information technology as the main parameter in realising quality education (Nurdianawati & Lestari, 2021). Integrating information technology in supporting the education process will minimise management errors (zero mistakes) that can have a detrimental impact on many parties, administrative staff, parents, students, and even more so, the school (Fernández-Batanero, Román-Graván, Reyes-Rebollo, & Montenegro-Rueda, 2021).

Developing a web-based payment system is an alternative problem-solving aspect of paying school fees and being the forerunner of an integrated, one-door school system. The School

Payment Information System (SIPS) is developed to improve services for information on the payment of education fees at SMP 2 Muhammadiyah Malang City. This payment system can realise school accountability and transparency in financial records. The existence of a web-based school payment information system can improve services and avoid errors in recording school payment data (Piyanto & Soyusiawaty, 2015).

The SIPS used can realise schools by prioritising the value of accountability and financial transparency in the financial management process, in this case, accounting. It is in line with the principles of management and administration of education (Rahmah, 2016). The system developed contains elements that the payment process must go through a series of recordings, classifying, summarising, and reporting (Harta & Julianto, 2018). Of course, this is the focus of developing the School Payment Information System.

The interface or service display based on the user will provide a login menu in the form of an account and payment reporting. The system developed will make it easier for parents to monitor payment data that has been made. This information can be done in real-time with the NIM account of each student. From its development, SIPS-MUDA fulfils the elements of functionality and usability (Wiyatno, Muhidin, & Prasetyo, 2020). Functionality is the central aspect of developing a system. It contains the system-developed part that is right on target and functioning correctly according to needs. However, even though it has reached a high level of functionality, several records need to be evaluated in the system. Notes as material for improving the system's quality are on the operator. Operators still need to manually input the system based on reports/delivery of payment data entered via WA. The payment system needs to be upgraded to a simpler version, such as with Android-based development, involving third parties such as banks through virtual accounts (Asoka, Tullah, & Handoko, 2020). Virtual accounts can provide optimal services related to the payment process (Baharun & Ardillah, 2019); (Baharun, Tohet, Juhji, Wibowo, & Zainab, 2021).

Based on a survey given to parents, there are still some disagreement responses to some instruments. It means that, although 80% more expressed satisfaction with implementing SIPS-MUDA, there are still some information service errors. The data shows that there are still three respondents who stated that there were still errors in the information obtained. Then the human error factor is still found in the process because the input process is still done manually. It is also in line with data related to task completion that there are still five respondents who did not receive payment information on the same day. It happens because the input process is done manually so that when payments are made outside working hours, the input process will be carried out on the next day. Although the percentage of obstacles is small, it still requires improvement and improvement efforts.

While the usability aspect, or ease of use, generally gets an excellent predicate for the response obtained from the user. These results are relevant to the effects of research conducted (Alshira'h & Al-Qomari, 2020), which states that the perception of users will accept the renewal of a system if the system offered as a substitute has other benefits and conveniences. Despite the ease of use of SIPS, several things must be evaluated, even though it is in the appropriate category. Evaluations on management need to be continuously carried out to improve so that similar problems are never repeated (Niswa, 2021).

The improvement point for SIPS is the input from customers/parents who state that the system has not satisfied them. It is related to the input process, which still takes time for officers,

so sometimes it is hampered because officers will input once a day on the SIPS-MUDA web. Of course, this is an essential suggestion for improvement to be followed up so that it is hoped that SIPS-MUDA can become a service that can provide perfect comfort and satisfaction for parents. Virtual accounts involving third parties in payment transactions can be an ideal alternative to overcome input processing constraints and time efficiency (Rakasiwi & Kusumo, 2021). In addition, the existence of an integrated system will be able to minimise errors with cashless transactions (Lenniawati & Anastasia, 2021)

CONCLUSION

Information services of school payments turned out to be one of the crucial factors in increasing public trust in schools. Efforts to use the SIPS-MUDA school payment information system are an alternative system that can reduce the human error factor in recording school payments. In overcoming omissions and misunderstandings related to payment information, the school payment information system implemented at SMP Muhammadiyah 2 Innovation Malang has proven effective. Based on the survey results, more than 80% of the parents' responses stated that they agreed that implementing SIPS-MUDA was effective and efficient. The average percentage of 80% says implementing SIPS-MUDA can be very effective. However, in terms of work efficiency, treasurers still encounter obstacles. Namely, it requires quite a lot of time to continue to input data manually. In this case, a third-party model, such as a bank through a virtual account, is a recommendation as a new alternative that schools can utilise. However, a thorough school financial analysis is needed to decide on using virtual accounts in school institutions because it costs a lot of money. Schools can also use the bank's Corporate Social Responsibility (CSR) fund in applying for Cooperation.

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