



The Effectiveness of Big Data Utilization in Recruiting New Students at SDN 4 Ciawi, Tasikmalaya Regency

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Abstract

This study aims to describe the use of big data, analyze its effectiveness, and identify supporting and inhibiting factors in the process of New Student Admissions (PPDB) at SDN 4 Ciawi, Tasikmalaya Regency. The research uses a descriptive qualitative approach with data collection techniques in the form of observation, school profile documentation (Dapodik), student data, study group data, infrastructure data, student attendance lists for the current month, and PPDB policy documents. The data analysis refers to the Miles and Huberman model, including reduction, presentation, and drawing conclusions accompanied by triangulation of sources. The results of the study show that SDN 4 Ciawi already has a fairly complete digitized database, covering 211 students in six study groups, nine educators and education staff, as well as adequate facilities, but the use is still administrative. There was a discrepancy between the data of the study group on Dapodik (215 students) and the real data on the class attendance list (211 students) on four of the six groups, as well as a number of infrastructure used that has not been formally recorded in the school database. The PPDB process for the 2025/2026 Academic Year has been running transparently according to schedule, but has not utilized historical registration data for predictive analysis. Supporting factors include the completeness of data and the availability of school operators, while inhibiting factors include suboptimal data synchronization and limitations in analytical competence.

Keywords: big data; effectiveness; PPDB; elementary school; SDN 4 Ciawi.

INTRODUCTION

The development of education in the digital era requires every educational unit to be able to adapt to changes in the increasingly dynamic strategic environment. Data management that was previously done manually has now shifted to information technology-based systems that allow integration, accuracy, and efficiency in decision-making. In the context

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of basic education management, data is an important element that supports the planning, implementation, and evaluation of school programs (Daniel, 2015).

National education policies also encourage the use of integrated information systems to increase transparency and accountability. The government through Basic Education Data (Dapodik) has provided a data infrastructure that allows schools to access and utilize information more systematically, so that decisions taken are based on evidence (evidence-based decision making) and not just administrative assumptions (Kemendikbudristek RI, 2022).

From a global perspective, the use of big data has become a strategic approach in various sectors, including education. Big data allows institutions to analyze patterns, trends, and projections that can help short-term and long-term planning, by emphasizing the importance of volume, velocity, and variation of data in producing useful information (Laney, 2001; McAfee & Brynjolfsson, 2012). At the basic education level, big data is not always interpreted as national-scale data, but as an accumulation of integrated and digitized school data, such as Dapodik data, prospective student population data, zoning data, and historical PPDB data.

Admission of New Students (PPDB) is an important stage in the implementation of basic education because it has a direct effect on the planning of the number of study groups, the needs of teachers, and the management of facilities. Its implementation is regulated through the Regulation of the Minister of Education and Culture Number 17 of 2017 concerning the Admission of New Students, which affirms the principles of objectivity, transparency, accountability, and non-discrimination. The principle of trustworthy management based on correct information is in line with the guidance of fulfilling the mandate to the rightful parties, as affirmed in surah An-Nisa verse 58, as well as the importance of careful planning for the future as affirmed in surah Al-Hasyr verse 18.

إِنَّ اللَّهَ يَأْمُرُكُمْ أَنْ تُؤَدُّوا الْأَمَانَاتِ إِلَىٰ أَهْلِهَا

Meaning: Allah commands that every trust be delivered to the one who has the right to receive it (Sura An Nisa verse 58).

يَا أَيُّهَا الَّذِينَ ءَامَنُوا اتَّقُوا اللَّهَ وَلْتَنْظُرْ نَفْسٌ مَّا قَدَّمَتْ لِغَدٍ

That is: let everyone pay serious attention to what he has prepared for tomorrow, as a form of careful planning (Sura Al Hasyr verse 18).

SDN 4 Ciawi, as an A-accredited public elementary school under the auspices of the Tasikmalaya Regency Education and Culture Office, annually collects data on prospective students through the Dapodik system, including identity data, age, domicile address, to data on study groups and facilities. However, the extent to which this data has been optimally utilized as a basis for analysis in designing strategies for recruiting new

students, and not just administrative archives, has not been widely documented empirically.

Based on this description, research on the effectiveness of the use of big data in the recruitment of new students at SDN 4 Ciawi is important to be carried out. The effectiveness in this study is interpreted as the extent to which the data that has been collected by schools, ranging from Dapodik profiles, data on educators and education personnel, data on facilities, to data on study groups, is really used consistently and appropriately to support the accuracy of PPDB planning and implementation, not just stored as an administrative archive. The novelty of this research lies in the use of primary school data documents, namely Dapodik profiles, study group data, and student attendance lists for the current month, which are cross-checked to assess the consistency and level of data utilization empirically, not just based on informant perceptions.

Problem Formulation

Based on the above background, the formulation of this research problem is: (1) how to use big data in the form of Dapodik data, study group data, and historical PPDB data in the process of recruiting new students at SDN 4 Ciawi; (2) how consistent and effective the use of the data is in supporting the accuracy of study group planning and school capacity; and (3) what factors support and hinder the use of big data in PPDB at SDN 4 Ciawi.

Research Objectives

This study aims to: (1) describe the use of big data in the process of recruiting new students at SDN 4 Ciawi; (2) analyze the level of consistency and effectiveness of the use of the data; and (3) identify supporting and inhibiting factors for the use of big data in the implementation of PPDB.

METHOD

This research uses a qualitative approach with a descriptive type of research. This approach was chosen because the research does not aim to test hypotheses statistically, but rather to understand in depth how data is used in the PPDB process and how effective it is in the real context in schools (Sugiyono, 2019).

The research was carried out at SDN 4 Ciawi which is located at Jalan Zenal Asikin Number 50, Ciawi Village, Ciawi District, Tasikmalaya Regency, West Java Province (NPSN 20210499). The selection of location was based on the availability of student administrative data that has been digitized through Dapodik and its relevance to the focus of the research. The collection of documentation data was carried out in September 2026, coinciding with the ongoing 2026/2027 school year.

The research subjects include school principals as the person in charge of policy, school operators who are also the technical responsible for PPDB, and six homeroom teachers as study group data managers. The object of the research is the use of big data in the PPDB process and the effectiveness of its implementation at SDN 4 Ciawi.

Data collection techniques are carried out in three ways. First, direct observation of the physical condition of the school, including classrooms, teachers' rooms, libraries, UKS rooms, prayer rooms, toilets, canteens, and ceremonial fields, which are documented in the form of photos. Second, interviews with the school related to data management and the implementation of PPDB. Third, a documentation study on school profile data (Dapodik) downloaded on September 11, 2026, including school identity data, data on educators and education personnel (PTK), student data, study group data, data on facilities, student attendance list for each class in September 2026, a school principal's decree on the PPDB committee, and a socialization banner of the New Student Admission System (SPMB) for the 2025/2026 Academic Year.

Data analysis refers to the interactive model of Miles, Huberman, and Saldaña (2014), which includes data reduction (sorting out administrative data relevant to the focus of the research), data presentation (in the form of comparative tables and descriptive narratives), and drawing conclusions and verification. Verification was carried out by comparing (cross-check) the numbers in the data of the study group downloaded by Dapodik with the real numbers on the student attendance list in each class, as a form of source triangulation to assess the consistency of the data.

RESULTS AND DISCUSSION

A. Overview of SDN 4 Ciawi

SDN 4 Ciawi is a public elementary school with a National School Identification Number (NPSN) 20210499 located at Jalan Zenal Asikin Number 50, Ciawi Village, Ciawi District, Tasikmalaya Regency, West Java, with accreditation status A. This school was established in 1960 and has the status of belonging to the Regional Government, implements School-Based Management (MBS), and organizes full-day learning activities for five days. Based on Dapodik data, the school has 1,300 watts of electricity sourced from PLN and Indihome internet access, as well as clean water sources from protected wells that are available quite all the time.

This institutional profile is the baseline of school big data stored in Dapodik, because accreditation, ownership status, electricity availability, and internet access are attributes that also determine SDN 4 Ciawi's readiness to digitize and utilize data sustainably to support the PPDB process in the following years.



Source: Researcher documentation, 2026

Figure 1. Gate and identity sign of SDN 4 Ciawi

B. Resources of Educators and Education Personnel (PTK)

Dapodik data recorded nine educators and education staff at SDN 4 Ciawi, consisting of one principal, six classroom teachers (homeroom teachers in grades 1 to 6), one teacher of Physical Education, Sports, and Health (PJOK), and one teacher of Islamic Religious Education. Details of personnel status and education level are presented in Table 1.

This PTK data is not just a personnel archive, but part of operational big data that is directly used in the implementation of PPDB: one teacher is designated as a school operator who manages data input in the Dapodik system, and another teacher is assigned as the person in charge (PIC) of PPDB. The appointment of this personnel data-based role is one of the early indicators of the use of big data in supporting the governance of new student recruitment.

Table 1. List of Educators and Education Personnel of SDN 4 Ciawi

No	Name	Departments	Levels	Employment Status
1	Iin Sutisna, S.Pd., M.Pd.	Principal	S2	PNS
2	Rina Nur Rahayu, S.Pd.	Grade 5 Teacher / BOS Treasurer	S1	PNS
3	Agus Endang Warsito, S.Pd.I.	Grade 6 Teacher	S1	PPPK
4	Rangga Aditya, S.Pd.I.	Grade 4 Teacher / Operator	S1	PPPK
5	Lina Nurdiawati, S.Pd.I.	Grade 1 Teacher / PIC PPDB	S1	PPPK

6	Wahyu Nurrahman, S.Pd.I.	Islamic Religious Education Teacher	S1	PPPK
7	Hilman Aziz Zakaria, S.Pd.	PJOK Teacher	S1	PPPK
8	Novita Nuriya Sodikianti, S.Pd.	Grade 2 Teacher	S1	Part-Time PPPK
9	Nadia Siti Habarotul Barkah, S.Pd.	Grade 3 Teacher	S1	Part-Time PPPK

Source: Dapodik Data SDN 4 Ciawi, downloaded September 11, 2026



Source: Researcher documentation, 2026

Figure 2. Teacher's room of SDN 4 Ciawi

C. Facilities and Infrastructure

Based on infrastructure data at Dapodik, SDN 4 Ciawi has six classrooms measuring approximately 8 x 7.9 meters, one teacher's room, one library room, one worship room (prayer room) and one School Health Business (UKS) room measuring about 5 x 5.5 meters each, two bathroom/WC units for male students, two bathroom/WC units for female students, and two toilet units for male and female teachers.

The results of field observations showed that the facilities were generally still in active use, although some spaces, such as prayer rooms, were observed to be in a poorly arranged condition and some walls were damaged by paint. In addition, two facilities were found that actually operated in the school environment, namely the canteen and the ceremonial field, but both were not recorded as separate entities in Dapodik's infrastructure data. This finding is an early indication that the database of school facilities does not fully reflect the real conditions in the field.

This infrastructure data is directly related to the effectiveness of the use of big data in PPDB, because the number and capacity of classrooms are the basis for calculating the

capacity of new students accepted every year. If the infrastructure data in Dapodik is not aligned with real conditions, then the PPDB capacity planning prepared based on this data has the potential to be less accurate.

Table 2. Summary of Infrastructure Data of SDN 4 Ciawi

No	Infrastructure Name	Number of Units	Remarks
1	Classroom	6	Grades 1 to 6, measuring $\pm 8 \times 7.9$ m
2	Teacher's Room	1	8 x 7.9 m
3	Library Room	1	8 x 7.9 m
4	Prayer Room (Mushola)	1	5 x 5.5 m
5	UKS Room	1	5 x 5.5 m
6	Student Toilet (L/P)	2 / 2	1.5 x 2 m each
7	WC Guru (L/P)	2 / 2	1.5 x 2 m each
8	Canteen*	1	Operating, not yet formally registered in Dapodik
9	Ceremonial Field*	1	Operating, not yet formally registered in Dapodik

Source: Dapodik data of SDN 4 Ciawi (2026) and researchers' field observations. The sign () indicates observation findings that are not contained in Dapodik infrastructure data.*



Source: Researcher documentation, 2026

Figure 3. Classroom conditions



Source: Researcher documentation, 2026

Figure 4. School library space



Source: Researcher documentation, 2026

Figure 5. UKS Room



Source: Researcher documentation, 2026

Figure 6. The prayer room of SDN 4 Ciawi, still looks empty and simple



Source: Researcher documentation, 2026

Figure 7. Row of toilets for teachers and students



Source: Researcher documentation, 2026

Figure 8. Activities in the school canteen



Source: Researcher documentation, 2026

Figure 9. Ceremonial grounds and student play areas

D. Data of Students and Study Groups

Dapodik data recorded a total of 211 students at SDN 4 Ciawi, consisting of 109 males and 102 females, with the majority aged 6 to 12 years old (205 out of 211 students) and Muslims (207 out of 211 students). The students were spread into six study groups (rombel) as presented in Table 3.

Table 3. SDN 4 Ciawi Study Group Data (Dapodik Data)

Rumble	Male	Women	Total	Homeroom Teacher
Class 1	17	22	39	Lina Nurdiawati
Class 2	19	14	33	Novita Nuriya Sodikianti
Class 3	23	20	43	Nadia Siti Habarotul Barkah
Grade 4	17	17	34	Rangga Aditya
Grade 5	18	13	31	Rina Nur Rahayu
Grade 6	17	18	35	Agus Endang Warsito
Total	111	104	215	-

Source: Data of the Dapodik Study Group SDN 4 Ciawi, downloaded September 11, 2026

The data in Table 3 shows an interesting thing: the total number in the study group table (215 students) is different from the total number in the summary of Dapodik student data (211 students), there is a difference of 4 students. This difference occurs in the same Dapodik module but different recap sheets, indicating an update lag between tables in the same database.

E. Conformity of Study Group Data with Real Data of Student Attendance

To further test the consistency of the data, the researcher compared (cross-check) the data of the study group on Dapodik with the real data on the September 2026 student attendance list in each class. The results of the comparison are presented in Table 4.

Table 4. Comparison of Study Group Data (Dapodik) and Real Data of Student Attendance List

Classes	Dapodik (L/P/Total)	Attendance List (L/P/Total)	Differences
Class 1	17 / 22 / 39	17 / 22 / 39	0
Class 2	19 / 14 / 33	19 / 13 / 32	-1 (P)
Class 3	23 / 20 / 43	22 / 20 / 42	-1 (L)
Grade 4	17 / 17 / 34	17 / 16 / 33	-1 (P)
Grade 5	18 / 13 / 31	18 / 13 / 31	0

Grade 6	17 / 18 / 35	16 / 18 / 34	-1 (L)
Total	111 / 104 / 215	109 / 102 / 211	-4

Source: Data on Dapodik Study Group vs. Student Attendance List per class, September 2026, processed by researchers

Table 4 shows that of the six groups, four groups (Classes 2, 3, 4, and 6) show a difference of one student between Dapodik data and the real data of the attendance list, while Grade 1 and Grade 5 are consistent. Interestingly, the total real data on the attendance list (211 students) is exactly the same as the total summary of student data on Dapodik, while the total table of Dapodik study group shows a higher number (215 students). This indicates that the table of study groups on Dapodik has not been updated following real changes in the classroom, possibly due to students moving, leaving, or changing status that has not been synchronized, even though the aggregate summary of students has been adjusted to current conditions.

F. Utilization of Big Data in the PPDB Process

The implementation of PPDB at SDN 4 Ciawi has a clear administrative foundation. Based on the Decree of the Principal of SDN 4 Ciawi Number P/001/PD.06.01/Sdn4cwi.Cwi/2023 concerning the Appointment of the New Student Admission Committee, the implementation of PPDB refers to Law Number 20 of 2003 concerning the National Education System, Government Regulation Number 19 of 2005 concerning National Education Standards, and Regulation of the Minister of Education and Culture Number 17 of 2017 concerning the Admission of New Students, with financing sourced from School Operational Assistance (BOS) funds.

The banner documentation of the New Student Admission System (SPMB) for the 2025/2026 Academic Year shows that the PPDB process is carried out in a scheduled and transparent manner: the announcement of registration in May 2025, the registration period on June 2 to 25, 2025, the announcement of students who are entitled to re-register on June 28, 2025, and re-registration on July 1 to 4, 2025. The requirements set include a registration form, a copy of a birth certificate, a copy of a TK/RA/TA'AM/PAUD diploma, a copy of a Family Card, a copy of a parent's ID card, and a copy of a government assistance card such as KIP/KKS/PKH for those who have one. This activity is coordinated by one official contact person, who also doubles as a homeroom teacher.



Source: School documentation, 2026

Figure 10. Banner of socialization of the New Student Admission System (SPMB) SDN 4 Ciawi for the 2025/2026 Academic Year

In terms of data utilization, the practice that runs at SDN 4 Ciawi shows that Dapodik data, including school profiles, PTK data, student data, group data, and infrastructure data, has been routinely used for reporting needs, allocation of BOS funds and the Smart Indonesia Program (PIP), determination of homeroom teachers, and the fulfillment of PPDB administrative requirements. However, there is no indication that historical data on previous years' enrollment is used to project the number of registrants in the following year, map the distribution of prospective students based on zoning, or predictively anticipate the needs of new study groups. The documented SPMB process emphasizes more on the completeness of files and the accuracy of schedules, rather than on analyzing enrollment trends.

G. Supporting and Inhibiting Factors

Based on the above findings, several factors supporting the use of big data in PPDB at SDN 4 Ciawi include: (1) the availability of relatively complete and up-to-date basic data on Dapodik, including school profiles, PTK, students, groups, and infrastructure; (2) the existence of school operators and PPDB contact persons who are clearly in charge of data management; (3) A accreditation and the availability of internet access (Indihome) that supports the data digitization process; and (4) the high public interest in schools, reflected in the number of students who are evenly distributed in the range of 31 to 43 students per group.

The inhibiting factors identified include: (1) the suboptimal synchronization of data between modules in one Dapodik system, as shown by the difference between rombongan belajar data and real attendance data; (2) a number of infrastructures that are actually operating, such as canteens and ceremonial fields, have not been formally recorded in the infrastructure database; (3) evidence of the use of historical registration data for predictive analysis in PPDB planning has not been found; and (4) limitations in data analysis competencies that are commonly faced by operators at the elementary school level.

H. Discussion

Referring to the characteristics of big data stated by Laney (2001), namely volume, velocity, variety, veracity, and value, the findings at SDN 4 Ciawi show that the dimensions of volume and variety have been adequately met: schools have data in various amounts and types, ranging from institutional profiles to daily data on student attendance. However, the dimensions of velocity and veracity are not fully optimal, as shown by the difference between data in Dapodik and real conditions in four of the six classes as well as the interval in inter-table updates in the Dapodik system itself. As a result, the value dimension, namely the value of data as the basis for strategic decision-making, has not been achieved optimally, because the available data is more used for administrative reporting than predictive analysis (McAfee & Brynjolfsson, 2012).

This finding is in line with Daniel (2015's) view that big data in education should ideally not only be interpreted as a large data set, but also as a source of information that comprehensively describes the real condition of schools. The difference between administrative data and real conditions at SDN 4 Ciawi, both in the number of students per class and in the recording of infrastructure, indicates that the ideal practice has not been fully achieved. In the framework of organizational effectiveness, according to Robbins (2018), the quality of decisions is greatly influenced by the quality of the information used; thus, the level of accuracy and consistency of data is an important prerequisite before big data can be truly used strategically in PPDB.

From the perspective of trustworthy governance, as affirmed in the principle of fulfilling the mandate to the rightful (QS. An-Nisa: 58) and the importance of careful planning for the future (QS. Al-Hasyr: 18), these findings regarding data differences confirm the importance of periodic data validation as part of the responsibility of objective and accountable education management. The PPDB process of SDN 4 Ciawi, which has been transparent in terms of schedules and administrative requirements, is an important capital, but it needs to be strengthened with more systematic data analysis practices so that it truly functions as a form of professional effort in the management of evidence-based education.

CONCLUSION

This research answers the formulation of the problem regarding the effectiveness of the use of big data in the recruitment of new students at SDN 4 Ciawi, Tasikmalaya Regency. It can be concluded that schools already have a relatively complete digitized database through Dapodik, including school profiles, data on nine educators and education staff, data on 211 students in six study groups, and infrastructure data, all of which have the potential to be the main reference in PPDB planning. The data has been routinely used for administrative needs, such as reporting, allocation of BOS and PIP funds, determination of homeroom teachers, and fulfilling the requirements for the

implementation of PPDB that runs transparently and according to the schedule for the 2025/2026 Academic Year.

However, the use of big data at SDN 4 Ciawi is still administrative and not strategic-predictive. It was found that there was a discrepancy between the data of the study group at Dapodik (215 students) and the real data on the attendance list of classes for the current month (211 students) in four of the six groups, as well as two facilities that actually operated, namely the canteen and the ceremony field, which have not been formally recorded in the school infrastructure database. In addition, no evidence was found of the use of historical registration data for the analysis of the projected number of registrants or the mapping of the zoning of prospective students in the following year.

The main supporting factors for the use of big data are the completeness of basic data, the existence of clear PPDB operators and contacts, A accreditation, and the availability of adequate internet access. Meanwhile, inhibiting factors include the lack of optimal data synchronization between Dapodik modules, limited data analysis competencies, and the absence of a structured data-based PPDB strategy.

For schools, it is recommended to periodically validate the data of study groups and infrastructure to be in harmony with real conditions, and start using historical PPDB data as a basis for projecting capacity needs. For school operators, improving the competence of processing and analyzing educational data needs to be encouraged. For the Tasikmalaya Regency Education Office, attention to the consistency of data between Dapodik modules at the elementary school level needs to be increased through periodic technical assistance. For future researchers, studies can be developed on the application of predictive analytics based on multi-year PPDB historical data to more accurately plan the needs of students, educators, and infrastructure.

BIBLIOGRAPHY

- Daniel, B. (2015). Big data dan analitik dalam pendidikan tinggi: Peluang dan tantangan. *British Journal of Educational Technology*, 46(5), 904–920. <https://doi.org/10.1111/bjet.12230>
- Kementerian Pendidikan dan Kebudayaan. (2023). Pelaksanaan PPDB untuk tahun ajaran 2023/2024. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.
- Kementerian Pendidikan dan Kebudayaan Republik Indonesia. (2022). Transformasi Digital Pendidikan. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.
- Kementerian Pendidikan dan Kebudayaan. (2017). Peraturan Menteri Pendidikan dan Kebudayaan Nomor 17 tahun 2017 mengenai penerimaan siswa baru di taman kanak-kanak, sekolah dasar, sekolah menengah pertama, sekolah menengah atas, sekolah menengah kejuruan, atau bentuk setara lainnya.
- Laney, D. (2001). *Manajemen data 3D: Mengendalikan volume, kecepatan, dan variasi data*. Stamford: META Group.
- McAfee, A., & Brynjolfsson, E. (2012). Big data: Revolusi manajemen. *Harvard Business Review*, 90(10), 60–68.

- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Analisis data kualitatif: Buku sumber metode (edisi ke-3). Publikasi SAGE.
- Mulyasa, E. (2017). Manajemen berbasis sekolah: Konsep, strategi, dan implementasi. Bandung: Rosdakarya Remaja.
- Pemerintah Republik Indonesia. (2003). Undang-undang Nomor 20 tahun 2003 tentang Sistem Pendidikan Nasional.
- Pemerintah Republik Indonesia. (2005). Peraturan Pemerintah No. 19 tahun 2005 tentang Standar Pendidikan Nasional.
- Phil Long, B., & Siemens, G. (2011). Menembus kabut: Analitik dalam pembelajaran dan pendidikan. Tinjauan EDUCAUSE, 46(5), 30–40.
- Robbins, S. P. (2018). Perilaku organisasi (Edisi global). Pearson Education.
- SDN 4 Ciawi. (2023). Keputusan Kepala Sekolah SDN 4 Ciawi Nomor P/001/PD.06.01/Sdn4cwi.Cwi/2023 mengenai Pengangkatan Komite Penerimaan Siswa Baru untuk Tahun Ajaran 2023/2024. [Dokumen internal sekolah].
- SDN 4 Ciawi. (2026). Profil Sekolah dan Data Pendidikan Dasar (Dapodik) SDN 4 Ciawi untuk Tahun Akademik 2026/2027. [Dokumen internal sekolah, diunduh 11 September 2026].
- Siagian, S. P. (2016). Human Resource Management. Jakarta: Bumi Aksara.
- Sugiyono. (2019). Metode penelitian kuantitatif, kualitatif, dan R&D.