

Evaluating and Enhancing Research Support Services in UPM Library

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ABSTRACT

This study investigates the alignment between postgraduate students' research support needs and the stages of the research lifecycle at Universiti Putra Malaysia (UPM). Using a quantitative approach, data were collected through an online survey of UPM postgraduate students, yielding 193 responses. The findings reveal that students require support across all stages of the research lifecycle, with the highest demand in the publication and sharing stage (M = 4.45), followed by data processing and analysis (M = 4.40) and preservation (M = 4.28). Although the planning stage showed the lowest mean score (M = 4.07), it still indicated substantial needs in literature review, research design, and ethics. Key areas of support include writing for publication, journal selection, statistical software use (SPSS and Python), open-access publishing, and research data management. These findings underscore the potential for academic libraries to strategically tailor their services to different research lifecycle stages, thereby enhancing postgraduate research capabilities and contributing to the overall quality of institutional research.

INTRODUCTION

With increasing emphasis on data-driven research and global competitiveness in higher education, academic libraries are transforming into active research partners rather than mere information providers. They now play a critical role in facilitating research productivity and innovation across the entire research lifecycle. At Universiti Putra Malaysia (UPM), the Sultan Abdul Samad Library (PSAS) serves as a central hub for research support, particularly for postgraduate students and academic staff. As research becomes more complex and data-intensive, PSAS has expanded its role beyond traditional resource provision to offer comprehensive research

support services throughout the research process. To meet these evolving needs, PSAS currently offers various services. As of January 2025, PSAS has subscribed to 25 online databases, including e-journals, e-books, and various research tools. These resources include major platforms such as Scopus, ScienceDirect, and EBSCOhost, along with Turnitin for plagiarism detection. Besides these digital tools, PSAS offers help with literature searches, one-on-one research consultations, and structured training in information skills through workshops. These workshops include Advanced Literature Search, Reference Management with Mendeley, Styling and Formatting with Microsoft Word, and the Scholarly Publishing Guide. PSAS also runs specialized authorship workshops that focus on current topics such as scholarly publishing, open science, open access, and predatory journals. Other services include document delivery, research data repository support through PutraRDRepo, access to the institutional repository, intellectual property verification services, journal verification service, and virtual consultation via the PSAS Online Chat platform. Even with all these services, there is a growing need to assess how well these services align with the actual research processes of postgraduate students.

To understand how such services can effectively support researchers, various models have been proposed to map the research lifecycle. Ragon (2019) categorizes researchers' activities into five main phases: planning, conducting, disseminating, assessing impact, and general activities. Similarly, Vaughan et al. (2013) investigated whether the specialized services provided by individual librarians could be standardized into a comprehensive model that supports the entire research lifecycle. Their study, conducted at a large research-intensive university, employed concept mapping and interactive presentations to collect insights from both researchers and librarians. The resulting model mapped library services to six specific stages of the research lifecycle: idea generation, funding, proposal development, conducting research, publishing results, and measuring impact. For each stage, tailored support services were provided, including literature searching and idea refinement, grant identification and application assistance, data management, compliance guidance, manuscript preparation, open access publishing, and citation and publication impact analysis. More recently, Buljung et al. (2024) describe the lifecycle as comprising four interrelated stages: explore and organize, collection and analysis, outputs and publications, and impact and engagement. While academic libraries have traditionally provided robust support during the early (planning) and final (publication) stages of research, several studies indicate a persistent gap in support during the data-intensive middle phases, particularly in areas such as data management, analysis, and collaborative work. This highlights the need for libraries to review and improve their services to better fit researchers' active work processes.

In this context, it is still not clear whether the services currently offered by PSAS match the real research workflows, challenges, and skill needs of postgraduate students. This gap shows the need for a systematic assessment to understand how well current services support students and where improvements are needed. Therefore, this study aims to evaluate how well PSAS current services meet postgraduate students' research needs across the research lifecycle: planning, data analysis, publication, and preservation. The findings will help improve PSAS services and ensure more focused and effective support for postgraduate research at UPM.

LITERATURE REVIEW

Research support refers to any activity performed by a library that helps scholarship and research at its institution (Hoffman, 2016). In recent years, academic libraries have increasingly shifted from a primary focus on managing collections to actively supporting the research process. Jimenez et al. (2024) show that research support services have become a central function of academic libraries, reflecting the growing complexity of research workflows and the heightened need for skills in information and data management. As a result, the role of libraries has expanded beyond providing access to resources toward becoming collaborative research partners. This includes offering information literacy instruction, research data management support, scholarly publishing guidance, and more embedded, consultative forms of assistance in which librarians work closely with researchers throughout different stages of the research lifecycle.

Research Support Services Across the Research Lifecycle

The research lifecycle describes how research work progresses through a series of connected stages, each requiring different forms of support. Buljung et al. (2024) describe the research lifecycle as comprising four interrelated stages: explore and organize, collection and analysis, outputs and publications, and impact and engagement. Although researchers may work in different disciplines, many of their research tasks share common patterns. This perspective shows that research is not a single activity but a set of ongoing processes in which support needs change as the work develops. Ragon (2019) presents a similar structure by grouping research activities into planning research, conducting research, disseminating research, and assessing research impact. This framework is useful for understanding how library services are aligned with different research needs. Ragon found that library support was strong for planning and dissemination activities, while support during the conducting phase was less developed. This indicates that libraries commonly provide strong support for literature searching, topic development, reference management, and publishing, but support for data collection, documentation, and analysis remains more limited. This pattern is also reflected in the research lifecycle model developed by Vaughan et al. (2013), who examined how library services can be systematically mapped to different stages of research work. Their model outlines a sequence of stages that include idea generation, securing funding, proposal development, conducting research, publishing results, and assessing research impact. Consistent with Ragon (2019), their study showed that library support was more concentrated at the beginning and end of the lifecycle. For example, literature searching, proposal preparation, and publication support were widely used, whereas services related to data collection and data analysis were less frequently accessed. Several participants in the study even noted that they did not realize the library could help with their research after the idea generation. Taken together, the findings show a consistent pattern. Academic libraries are well established in supporting early conceptual work of research, including topic exploration and literature searching, and they also provide substantial support in the final dissemination stages, such as publication and research visibility. However, support for the middle, data-intensive stage remains less developed, particularly in data management, data analysis, and workflow organization. This gap suggests that while libraries have begun to reposition themselves as research partners rather than only information providers, the transition toward fully embedded support across the research lifecycle is still ongoing and uneven across institutions.

Evolution of Research Support Services

The progression of Research Support Services in academic libraries is driven by advancements in technology, evolving research practices, and the growing emphasis on data management and open access. Libraries continue to expand their roles by embracing digital tools and adopting emerging technologies such as artificial intelligence (AI). The integration of AI further strengthens library services by streamlining routine tasks and enabling more personalized and responsive support tailored to the diverse needs of users. Liu (2024) found that the adoption of AI technologies markedly improves information retrieval speed, enhances user satisfaction, and increases the efficiency of research support compared with conventional service models. Given that postgraduate students require advanced information services to conduct in-depth and innovative research, the implementation of AI-based solutions can substantially enhance the effectiveness of academic library research support. Building on this technological advancement, the development of a digital library prototype that integrates research support service features represents a strategic initiative in the evolving landscape of academic libraries. Such prototypes, particularly those leveraging emerging technologies like mobile applications, can expand accessibility and foster greater engagement with research resources. From an organizational perspective, academic libraries must not only adopt innovative technologies but also prioritize enhancing research support services and establishing strong partnerships with university research units to effectively meet the complex and evolving needs of the academic community (Maryati et al., 2020). Moreover, the findings indicate a critical need for libraries to prioritize the development and delivery of services encompassing research data management, institutional repositories, advanced research tools, research impact assessment, and scholarly communication, all of which strengthen institutional research capacity. Accordingly, academic libraries, particularly within universities, should focus on sustained investment in digital infrastructure, expansion of research-oriented resources, active promotion of service awareness, and the provision of specialized training and consultation to improve the effective use of research support tools and services (Singh & Siwach, 2024).

Recent international studies demonstrate a significant expansion in the scope of Research Support Services within academic libraries, reflecting broader trends in scholarly communication, data management, and researcher engagement. Across diverse contexts, libraries are increasingly moving beyond traditional information provision toward a more holistic support model that integrates both foundational and advanced research assistance. Howlett et al. (2024) analyzed 44 university library websites and identified 11 service areas. The most prominent services were publishing, bibliometrics, engagement and impact, and advanced data skills, while the least common were online engagement, reference management, and introductory library services. Similarly, Sawe et al. (2024) found that Kenyan public university libraries consistently provided foundational services, including access to resources, instructional support, scholarly communication, and data management. Their findings showed that while all libraries offered core services such as access to resources, instructional support, scholarly communication, and research data management, the availability of advanced services remained limited. Basic services such as copyright advice, plagiarism guidance and consultations were effectively delivered, meeting most students' needs. However, advanced support areas such as proposal development, grant application assistance, data analysis, metadata creation, and data management workshops were

either lacking or insufficiently developed. Another point of convergence across literature is the use of multiple modes of delivery to engage researchers. Howlett et al. (2024) reported that libraries in Australia and Aotearoa New Zealand deliver RSS through both synchronous (workshops, consultations, live chat) and asynchronous (LibGuides, online platforms) channels.

In summary, the literature shows that Research Support Services in academic libraries have evolved from traditional information provision to comprehensive, researcher-focused support encompassing data management, publishing, bibliometrics, and research impact. Libraries now play an important role in strengthening institutional research capacity. However, differences remain in the range and quality of services offered due to variations in resources, staff expertise, and researcher awareness. Previous studies indicate that library support is strongest at the beginning and end of the research lifecycle, particularly in literature searching, proposal development, and dissemination. At the same time, assistance for data collection, analysis, and documentation remains limited. The introduction of new technologies such as artificial intelligence presents opportunities to improve efficiency and personalize services, but challenges related to infrastructure, training, and strategic planning continue to slow progress. To achieve more effective and inclusive support, libraries need to enhance their involvement across all stages of the research process through continuous investment, collaboration, and proactive engagement. This study fills a gap by evaluating the alignment between existing library services and postgraduate students' needs across all stages of the research lifecycle.

METHODOLOGY

This study employed a quantitative research approach using a survey method as the primary data collection technique. This method was chosen because it enables the collection of measurable data from a large postgraduate population, allowing the researcher to identify trends in research support needs and service use across different stages of the research lifecycle.

The survey instrument was developed using Google Forms and distributed through official university email channels to ensure wide coverage and accessibility. Participation was voluntary, and respondents were informed that their answers would remain anonymous and confidential. The questionnaire comprised four main sections: (1) respondent background, (2) awareness and use of Research Support Services, (3) support needs across the four stages of the research lifecycle (planning, data analysis, publication, and preservation), and (4) overall satisfaction and suggestions. Most items were measured using a five-point Likert scale ranging from 1 = no support needed to 5 = very high support needed.

The target population consisted of all postgraduate students enrolled at UPM in 2025, totaling 12,118 students (6,025 local and 6,093 international) (Centre for Corporate Strategy and Relations, UPM, 2025). All registered postgraduate students were eligible to participate, regardless of whether they were enrolled in research-based or coursework programs. The Krejcie and Morgan (1970) sample size table was used to determine a minimum sample of 373 respondents for a population of approximately 12,000 at a 95% confidence level and a 5% margin of error. A voluntary response sampling approach was employed, as the survey link was

distributed to the entire postgraduate population and responses were collected from those who chose to participate. Data collection was conducted from July 2 to July 16, 2025, yielding 193 valid responses, representing a 51.7% response rate based on the recommended sample size. While the total number of responses was below the ideal threshold, the response rate far exceeded typical averages for online surveys. As noted by Deutskens et al. (2004), response rates of about 20% are usually considered acceptable in internet-based questionnaire research. Therefore, the responses collected are meaningful and suitable for providing initial insights into how well the library's Research Support Services meet the needs of postgraduate students at different stages of the research life cycle.

RESULTS AND DISCUSSION

This section presents the survey results. It looked at how postgraduate students engage with and view library Research Support Services during different stages of the research life cycle: planning, data processing and analysis, publication and sharing, and preservation.

Demographic Profile of Respondents

A total of 193 postgraduate students from different faculties and institutes at Universiti Putra Malaysia took part in the survey. Table 1 provides a detailed breakdown of the respondents by faculty.

Table 1: Respondents by faculty

Faculty	Number (%)
Faculty of Agriculture	28 (14.5%)
Faculty of Educational Studies	26 (13.5%)
Faculty of Engineering	21 (10.9%)
Faculty of Medicine and Health Sciences	19 (9.8%)
Faculty of Modern Languages and Communication	11 (5.7%)
School of Business and Economics	14 (7.3%)
Faculty of Science	10 (5.2%)
Faculty of Forestry and Environment	10 (5.2%)
Faculty of Computer Science and Information Technology	9 (4.7%)
Faculty of Human Ecology	9 (4.7%)
Faculty of Design and Architecture	9 (4.7%)
Faculty of Food Science and Technology	6 (3.1%)
Faculty of Biotechnology and Biomolecular Sciences	5 (2.6%)
Faculty of Veterinary Medicine	3 (1.6%)
School of Graduate Studies	2 (1.0%)
Faculty of Agricultural and Forestry Science (UPMS)	2 (1.0%)
Others	9 (4.7%)

Most survey respondents were from the Faculty of Agriculture, Faculty of Educational Studies, and Faculty of Engineering, indicating strong participation from applied and technical disciplines. Overall, the distribution shows a balanced mix of science, social science, and humanities backgrounds, with agricultural and educational fields being the most represented.

Out of the 193 respondents, 118 students (61.1%) were enrolled in PhD programs, while 75 students (38.9%) were pursuing master's degrees. This distribution indicates a slightly higher participation rate among doctoral students compared to master's students. The representation from both levels of study suggests that the findings can reflect the varying research support needs across different postgraduate academic pathways. In terms of study mode, the majority of respondents were enrolled in research-based programs, with 154 students (79.8%) pursuing this path. A smaller portion of the sample, 38 students (19.7%), were involved in coursework-based programs, while only one respondent (0.5%) identified as a postdoctoral researcher. This reflects the dominant participation of research-oriented students in the survey, aligning with the study's focus on the research lifecycle and support services provided by the library. The majority of respondents were in the initial phases of their postgraduate studies, with Year 1 having the largest group, followed by Year 2. This shows that many were still at the beginning of their research journey, when library support for research planning and finding information is most useful. Table 2 shows the summary of respondents by year of study.

Table 2: Distribution of Respondents by Year of Study

Year of Study	Year 1	Year 2	Year 3	Year 4	Year 5 or above
Number (%)	81 (42.0%)	50 (25.9%)	31 (16.1%)	25 (13.0%)	6 (3.1%)

Support Needs across the Research Lifecycle

The respondents were asked to rate the level of support they required at each stage of their research process using a 5-point Likert scale (1 = No support needed, 5 = Very high support needed). The findings, summarized in Table 3, reveal important insights into students' perceived needs for library support throughout the research lifecycle.

Table 3: Mean Scores of Postgraduate Students' Perceived Support Needs across Research Lifecycle Stages

Item	Mean	Std. Error	Std. Dev.	Var.	Min	Max
Planning & Design: Developing research ideas, choosing a research topic, identifying problems, and designing research questions and methodology	4.07	0.08	1.17	1.38	1	5
Data Processing & Analysis: Collecting data, using analysis tools, and writing results and discussion based on data analysis	4.40	0.07	0.94	0.88	1	5
Publication & Sharing: Writing journal articles, selecting publication channels (open access, indexed journals, etc.), using citation tools, and sharing findings openly.	4.45	0.06	0.85	0.73	1	5
Preservation: Storing thesis or research data in a secure, long-term, accessible platform such as the institutional repository or open data repositories.	4.28	0.07	0.96	0.92	1	5

Among the four key stages evaluated, the highest mean score was recorded for the publication and sharing phase ($M = 4.45$, $SD = 0.85$), indicating that postgraduate students require substantial

support in writing journal articles, selecting suitable publication channels, navigating the publishing process, and understanding open access options. This was followed closely by the data processing and analysis phase ($M = 4.40$, $SD = 0.94$), where students expressed a strong need for assistance in managing data collection and applying appropriate statistical and analysis tools. The preservation phase, which involves archiving theses or research datasets in secure and accessible repositories such as the UPM Institutional Repository (UPM IR) and PutraRDRRepo, also showed a relatively high level of support need ($M = 4.28$, $SD = 0.96$). Meanwhile, the planning and design stage received the lowest mean score among the four phases ($M = 4.17$, $SD = 1.17$), suggesting comparatively lower but still significant support needs related to topic development, research question formulation, and proposal writing. Overall, these results indicate a consistently high level of support across all stages of the research process, regardless of their year of study, with a particular emphasis on publication and data analysis. This highlights key areas where the library can strengthen its research support services to better align with student expectations and academic demands.

Planning Stage

In the planning stage, students most frequently cited the need for help with finding and reviewing literature ($n=141$, 73.1%), which aligns with the library's traditional strength in information access and retrieval. Other highly requested areas included writing research proposals ($n=99$, 51.3%), formulating research questions ($n=89$, 46.1%), and topic selection and scoping ($n=86$, 44.6%). A smaller yet significant proportion ($n=76$, 39.4%) indicated a need for support in research ethics. These findings highlight the important role of librarians in helping students during the conceptual phase of their research.

PSAS currently provides several services that address these needs, including information literacy instruction, the New Postgraduate Series training, systematic literature review workshops, and publication and academic writing sessions. In addition to these scheduled programs, librarians can also conduct on-demand training for faculty members or small groups of students. However, these services could be better utilized through more strategic promotion and delivery approaches that are aligned with postgraduate research workflows. One possible direction is closer collaboration with faculties to integrate these sessions into postgraduate research training programs, along with the development of modules that reflect different disciplinary research cultures and methodological requirements. PSAS also assigns liaison librarians for each faculty, allowing students to book personalized consultations focused on their specific research topics. Such one-to-one engagement is especially valuable for long-term research projects, including doctoral dissertations, as it enables librarians to become familiar with the research focus, relevant literature, and disciplinary expectations. This ongoing, personalized support allows librarians to contribute more meaningfully to the development of students' research work, rather than assisting only at isolated points in time.

Data Processing and Analysis Phase

Although the data processing and analysis phase did not receive the highest overall support rating among the four research stages, findings still indicate a substantial interest in developing

competencies related to data handling and analytical techniques. This suggests that postgraduate students recognize the importance of strengthening their skills in this area, particularly in statistical tools and data interpretation. Respondents expressed interest in three main types of analytical tools. For statistical analysis, the most commonly mentioned tools were SPSS (n=73, 37.8%) and regression-related methods (n=30, 15.5%), followed by general and introductory statistics (n=21, 10.9%; n=28, 14.5%). For coding and programming, Python (n=69, 35.8%) and R Studio (n=35, 18.1%) were among the preferred tools. In the area of data visualization, 36.3% (n=70) of respondents expressed a need for further training. Excel (n=29, 15.0%) was also identified as a useful tool across several analytical tasks.

These findings highlight a clear opportunity for PSAS to expand its Research Support Services to better help students master analytical tools and techniques. The library has already taken steps in this direction through initiatives such as the UPM Statistics Week, which promotes data literacy and research skills among the university community through workshops including SPSS Data Analysis, Data Analytics and Visualization using Excel and Power BI. Building on these efforts, the library could further enhance its role by partnering with data experts or faculty members to provide more hands-on training in coding, statistics, and visualization tools, thereby strengthening research capacity across disciplines. The increasing demand for advanced data competencies aligns with findings from Howlett et.al (2024), who reported that advanced data skills are now among the most prominent Research Support Services in Australian and New Zealand university libraries. These global trends show that PSAS efforts are moving in the right direction, as they adapt international good practices to meet the needs of Malaysian postgraduate students.

Publication and Sharing Phase

The publication and sharing phase recorded the highest overall mean score ($M = 4.45$, $SD = 0.85$), underscoring its importance to postgraduate students. Specifically, respondents expressed strong needs for guidance on selecting suitable journals (n=135, 69.9%), writing journal articles (n=125, 64.8%), conducting systematic literature reviews (n=123, 63.7%), and understanding the publication process (n=117, 60.6%). Additionally, 59.1% (n=114) wanted help avoiding predatory journals, while 52.3% (n=101) sought to better understand open access publishing. Technical and visibility aspects were also reflected, with 59.5% (n=115) indicating needing help with thesis formatting using Microsoft Word and 45.6% (n=88) wanting help creating and managing their research profiles (e.g., ORCID, Google Scholar). These findings reinforce the growing complexity of the academic publishing landscape and the essential role libraries can play in bridging knowledge gaps in scholarly communication, journal evaluation, and ethical publishing. This finding is consistent with the work of Howlett et al. (2024). They reported that publishing was the most common service offered in nearly all university libraries surveyed in Australia and Aotearoa New Zealand. Their study showed that libraries met these needs through both synchronous formats, such as workshops and consultations, and asynchronous formats, such as online guides. This reflects the key role of publishing support.

Taken together, these results suggest that publication-related services are a universal priority in academic library research support, and both local and international evidence highlight the value

of delivering such services through diverse, accessible formats to maximize reach and impact. This also suggests a potential service gap in structured publication literacy training and proactive journal evaluation support, which the library could address through targeted initiatives such as assisting students in identifying and selecting high-quality journals before submission and expanding research consultation sessions focused on publication strategies. PSAS has established partnerships with international publishers to deliver workshops on topics such as “*How to Publish in High-Quality Journals*” and “*Avoiding Predatory Journals*”. However, the findings of this study suggest that these initiatives would benefit from being implemented in a more structured and sustained manner. Strengthening the frequency, visibility, and continuity of such programs could more effectively enhance postgraduate students’ publication literacy, promote ethical and informed journal selection, and reinforce good research integrity practices. This is important because publication skill development is not adequately supported through one-time or stand-alone workshops. Instead, it requires ongoing, scaffolded support that provides opportunities for personalized feedback, iterative writing improvement, and continued guidance throughout the research and publication process. Implementing such sustained support frameworks would position PSAS to play a more strategic role in preparing students to navigate the increasingly competitive and complex scholarly communication environment.

Preservation Phase

Support needs during the preservation phase were relatively high, with a mean score of 4.28. This score ranked just below the publication and data analysis stages. This phase includes archiving research outputs, submitting theses or datasets to institutional or open data repositories, and ensuring long-term access to scholarly materials. The findings suggest that postgraduate students increasingly recognize the importance of digital preservation and institutional requirements. Even though preservation scored slightly lower than publication and data analysis, the overall mean indicates that students value services that ensure research continuity and long-term accessibility. This pattern suggests a potential service gap in the preservation phase, as students may be aware of its importance but still require guidance and hands-on support. Libraries could address this gap through targeted workshops on repository submission processes, metadata standards, or the creation of data management plans. For example, PSAS has implemented initiatives to support UPM researchers in managing their research data through the Putra Research Data Repository (PutraRDRepo), where datasets can be deposited in structured formats with appropriate metadata and documentation, and through self-archiving in the UPM Institutional Repository (UPMIR), which guides researchers in submitting theses, publications, and other research outputs to ensure proper long-term access, discoverability, and compliance with institutional policies. These initiatives not only provide researchers with practical guidance in preserving their work but also help the library identify areas where additional support may be required to strengthen data stewardship practices. This aligns with Jimenez et al. (2024), who observed that from 2016 to 2020, libraries became more involved in managing data throughout its lifecycle and meeting open practice standards. They took on expanded roles in data curation, metadata creation, repository management, and fulfilling funder requirements for data sharing. These trends highlight a growing understanding that effective preservation goes beyond storage, ensuring discoverability, interoperability, and lasting usability of research outputs over time. For

PSAS, this represents a strategic opportunity to further enhance training and outreach, reinforcing institutional goals related to open science, transparency, and responsible data sharing.

In summary, the findings indicate consistently high support needs across all stages, especially in publication and data analysis. These insights can guide targeted improvements in PSAS's Research Support Services, including more focused training, expanded delivery formats, and greater visibility of current offerings to ensure that UPM researchers receive comprehensive support throughout the research lifecycle.

CONCLUSION

This study evaluated the research support needs of UPM postgraduate students across four stages of the research lifecycle: planning and design, data processing and analysis, publication and sharing, and preservation. Students showed needs in all stages, with the highest demand for publication and sharing, followed by data analysis and preservation. These results indicate that postgraduate students are expected not only to conduct rigorous research but also to disseminate their work responsibly and ensure its long-term accessibility. The findings provide a roadmap for PSAS to strengthen its support for postgraduate research. Specifically, PSAS could expand its publishing workshops, develop data analysis training modules, and enhance repository support services. By increasing the visibility of current services, offering targeted training in high-demand areas, and providing comprehensive support throughout the research lifecycle, the library is well-positioned to become a strategic partner in postgraduate research success. These initiatives will also help UPM achieve its strategic goals of enhancing research capacity, academic reputation, and global knowledge sharing through open science. Targeted improvements based on these insights will not only benefit students but also elevate UPM position as a leading research institution.

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REFERENCES

- Buljung, B., Bongiovanni, E., & Li, Y. (2024). *Navigating the research lifecycle for the modern researcher*. University of Colorado. <https://colorado.pressbooks.pub/researchlifecycle/>
- Centre for Corporate Strategy and Relations, Universiti Putra Malaysia. (2025). *Facts & Figures 2025: With knowledge we serve*. Universiti Putra Malaysia. https://pspk.upm.edu.my/upload/dokumen/20250514152427CTT_FACTS&FIGURES_PRUF_10.pdf
- Deutskens, E., De Ruyter, K., Wetzels, M., & Oosterveld, P. (2004). Response rate and response quality of internet-based surveys: An experimental study. *Marketing Letters*, 15, 21-36.

- Hoffman, S. (2016). *Dynamic research support in academic libraries*. Facet Publishing, London.
- Howlett, A., Colla, E., & Joyce, R. (2024). Toward redefining library research support services in Australia and Aotearoa New Zealand: An evidence-based practice approach. *New Review of Academic Librarianship*, 30(1), 24-51
- Jimenez, S. A., Berbegal-Mirabent, J., & de la Torre, R. (2024). How do university libraries contribute to the research process?. *The Journal of Academic Librarianship*, 50(5), 102930.
- Liu, M. (2024). Construction of research intelligence service system for college libraries in the era of artificial intelligence. *Applied Mathematics and Nonlinear Sciences*, 9(1), 1-15.
- Maryati, I., Purwandari, B., Budi Santoso, H., & Budi, I. (2020). Implementation strategies for adopting digital library research support services in academic libraries in Indonesia. *Proceedings - 2nd International Conference on Informatics, Multimedia, Cyber, and Information System, ICIMCIS 2020*, 188–194. <https://doi.org/10.1109/ICIMCIS51567.2020.9354327>
- Ragon, B. (2019). Alignment of library services with the research lifecycle. *Journal of the Medical Library Association*, 107(3), 384–393. <https://doi.org/10.5195/jmla.2019.545>
- Sawe, E., Mwai, N. W., & Oyieke, L. I. (2024). Doctoral students' satisfaction with research support services at public universities in Kenya. *South African Journal of Libraries and Information Science*, 90(1), 1-20.
- Singh, K., & Siwach, A. K. (2024). Researchers' expectations towards library research support services (LRSS): A case study of Maharshi Dayanand University, Rohtak. *DESIDOC Journal of Library and Information Technology*, 44(2), 69–76. <https://doi.org/10.14429/djlit.44.2.18976>
- Vaughan, K. T. L., Hayes, B. E., Lerner, R. C., McElfresh, K. R., Pavlech, L. A., & Simeone, A. (2013). Development of the research lifecycle model for library services. *Journal of the Medical Library Association*, 101(4), 309–311. <https://doi.org/10.3163/1536-5050.101.4.013>