

***Satellite Meeting: Agile methodology in libraries: innovations in library projects and management.***

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## **Application of Agile Method in Building Innovative Library Services in University Libraries in Nigeria**

**Adaora Chigozie Obuezie**

[ac.obuezie@unizik.edu.ng](mailto:ac.obuezie@unizik.edu.ng)

Department Of Information Science, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

**Juliet C. Alex-Nmecha**

[juliet.alex-nmecha@uniport.edu.ng](mailto:juliet.alex-nmecha@uniport.edu.ng)

Department Of Information Science, University Of Port Harcourt, Rivers State, Nigeria



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### ***Abstract:***

*This paper on the Application of the Agile Method in Building Innovative Library Services in University Libraries in Nigeria ascertained the use of the agile method in creating innovative library services, identified different types of innovative services created using the agile method, determined the benefits of using agile methods in creating the innovative library services and identified the challenges of using the agile method in creating innovative library services. To drive home, the stated objectives, this paper is a descriptive survey research design where a questionnaire and interview were used as the instruments for collection of data, and the data collected were analyzed using descriptive statistics while the interview was given a thematic analysis. A total number of forty-one (41) Librarians made up the research population, 24 librarians from Prof. Festus Aghagbo Nwakor Library, Nnamdi Azikiwe University, Awka, Anambra State, and 17 librarians from Donald E.U. Ekong Library, University of Port Harcourt, Rivers State. Three librarians from each of the university libraries studied were randomly selected as the interviewee for the research. The findings of this research revealed that the agile method is very useful in the library and can be used for easy adaptation to technological advancement where innovative services such as capacity building and institutional repository services can be created. It was revealed to be beneficial in the development of new skills and building strong teams, although the method is faced with some challenges of dependencies between team members and less documentation among others. It was concluded that the agile method is an interesting method for building a collaborative healthy working environment. It is therefore recommended that the library management should adopt an agile method for the effective use and building of innovative, user-*

*centered, and viable products and services in the library. Librarians should also be involved at every stage of the process to facilitate full acquaintance and ameliorate some challenges that may surface from the use of the method.*

**Keywords:** In University libraries, Agile Method, Innovative library services, Library users, Nigeria.

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## **Introduction**

The 21<sup>st</sup> century has revolutionized technological advancement, especially in the aspect of information management, initiating global changes. The curious library users' information needs must be satisfied. The advancement of these technologies has created a paradigm shift in library routines where librarians now strive to provide library services that would effectively sort their users' Information needs. This is prominent in University libraries which serve the academic community with diverse information, research, and teaching needs, who also possess different levels of information literacy skills among others from different disciplines.

A University library is a library situated inside a university environment. It is a resource centre for teaching, learning, research and other academic activities. The University Library is an academic library with a myriad of information repositories that caters to the faculties in their parent academic community. They are the heart of the university due to their dynamic and quality roles in teaching, learning and research activities. Bhavanishankar (2018) referred to a university library as the heart of education, a great conservator of learning, and a vital organ for the proper exploitation of our intellectual resources, without which a quality education and maintenance of free access to ideas would be impossible. University libraries with these heavy responsibilities and expectations need to be abreast with the smart ways of creating products and services commensurable to their 21st-century users. These realities promote the need for creating innovative services and evolving new ways to best manage the process with the limited library funds and resources available while achieving satisfied user experiences in their libraries.

Innovative library services which can otherwise be referred to as service innovation according to Tiwari (2016) are the use and improvement of various latest technologies to provide better and timely services to the users within a reasonable cost for the development of the users as well as the society as a whole. Contextually, Innovative library services are new library services created for implementation in a library system through ideas cultivated by librarians based on the users' assessment and the available library resources, to best satisfy the library users' needs. The 21st-century library system is no longer a job where a professional librarian can be assigned to handle all the activities of a library alone but has become a job with varied activities which can be best handled as a team for best results. Building different user-centred innovative library services using the agile method is a relevant approach to achieving productivity while maintaining a healthy workflow. Agile according to Agile Alliance (2023) is the ability to create and respond to change, it is a way to deal with an uncertain turbulent environment and ultimately succeed. The word agile represents adaptiveness and response to change which is an essential approach to survival. It's all about an individual being able to think through and understand what's presently going on in their environment, identify existing uncertainty, and devise means of adaptation moving forward.

The term “Agile” was first coined in 2001 by a group of software developers seeking to reduce the risks associated with traditional software development by emphasizing small, incremental changes delivered quickly and often. Agile has grown in popularity and is now used by software developers around the world. An Agile library as stated by Sadri (2015) may consist of documents, tutorials, videos, and other materials that support the Agile method. These may include best practices for project management, software estimation, and other topics related to agile development. Agile libraries to Raiken (2019) can be invaluable for software developers since they provide easy access to the most up-to-date, approved approaches and methods for implementing Agile. Additionally, since Agile is an ever-evolving field, the presence of an agile library can help to ensure that developers stay abreast of the latest developments in the techniques and approaches to software development. Furthermore, such libraries provide an opportunity for developers to compare the effectiveness of different approaches and use cases.

The Agile methodology is a set of values, principles, and practices that emphasize the value of effective communication, feedback, and flexibility in the development process (Sheridan, n.d). It enables libraries to quickly respond to external factors, such as user feedback and changing technologies, while still ensuring quality. By becoming an agile library, librarians can quickly develop and test innovative library services without a lengthy or costly planning process. Agile methods in libraries in this context are ways to manage library projects by breaking them into stages, involving constant collaboration with the management, communication, teamwork, feedback, follow-up practices, and continuous improvement at every stage for customer satisfaction. Agile methodology can be used to prototype new services and get feedback from users quickly, allowing libraries to iterate on their services as needed. Its iterative approach also allows libraries to quickly pivot if an idea turns out to be unworkable or unpopular with users. The agile methodology also supports library staff in identifying user needs and gathering user feedback that can inform the development of new services. This can help ensure that services meet user needs and have the desired impact. Furthermore, agile methodology encourages flexibility throughout the design and development process, allowing libraries to quickly adapt and respond to changing user needs. Overall, the Agile methodology is a valuable tool for library services, as it can help libraries quickly develop innovative services that are tailored to their users.

The Agile Method according to Allan (2019) is a popular project management framework that helps organizations develop innovative services. Agile prioritizes three elements: customer collaboration, a cross-functional team, and continual improvement. Library services are no different. Utilizing Agile helps librarians and their teams build innovative products on time and within budget. Libraries have the unique situation of often needing to create services and products that are heavily research-based and unlike anything else out there, which requires time, user feedback, iteration, and deep collaboration between team members. Agile provides all the tools and techniques needed to do this well. Specifically, the Agile method encourages clear communication between all parties, understanding customer needs and responding to feedback, and decomposing large tasks into smaller chunks. This helps guide library teams to develop services that meet customer expectations promptly, reduce surprises, better understand customer preferences and needs, as well as identify areas of weakness that can be improved upon and better address common issues as well as help ensure the creative and successful implementation of the desired outcomes. Additionally, Agile encourages continual improvement as the team develops its product. Having these insights in hand allows libraries to create services that are more tailored to the library user community.

## **Statement of the Problem**

In an agile context, Libraries are not different from other organizations. It seeks external agility and wants to be as successful and consistent as possible in providing products and services that would best suit its users' needs. In the 21<sup>st</sup> century, libraries are faced with relevant dilemmas in providing their services, even in the existing challenge of budgetary pressure, they experience high demands pertaining to a large number of search requests, many new registrations, and high demand for research literature which can only be handled through the building of innovative products and services to swiftly adapt to the changing demands. This can not be done without the absolute implementation of enhanced Internal communication and team spirit through working ethics, transparency, maintaining positive organisational culture, flexible roles and constant integration of user feedback among others into the work process. This research provided insight into the use of the Agile method to provide commensurable services to 21st-century library users.

## **Objectives of the Study**

The objective of this study is to investigate the application of agile methods in creating innovative library services. It specifically:

1. ascertained the use of the agile method in creating innovative library services
2. identified different types of innovative services created using the agile method
3. determined the benefits of using agile methods in creating the innovative library services
4. identified the challenges of using the agile method in creating innovative library services

## **Research Questions**

This study was guided by the following research questions.

1. What is the use of the agile method in creating innovative library services?
2. What are the types of innovative services created using the agile method?
3. Are there benefits of using agile methods in creating innovative library services?
4. What are the challenges of using the agile method in creating innovative library services?

## **Brief Literature**

Few scholars have written on agile methods, approaches, principles and processes. Although the method was first initiated for the development of software. The method has been noticed to be very useful for project management and other activities in organizations which have encouraged its use. As the agile method accentuates collaboration, agility and experimentation in the library, its goal is to deliver high-quality library products and services promptly and responsively. According to Coursera (2023), the Agile method has a set of values which made it stand out for adoption and they include the fact that it considers Individuals and interactions over processes and tools, although tools and processes are relevant in project development but this value prioritizes people by having them in the right place, empowering cooperation among them which can lead to a record of successes. The method as well considers working software over comprehensive documentation; documentation is very essential but having a functional product for quality service provision is more important. The value believes

in a proactive approach than long planning and documentation stages. Another value is that it considers customer collaboration over contract negotiation; This value maintains contact with the stakeholders as well as other team members throughout the creation process. It also considers the value of responding to change over following a plan; this value enables the consideration of the user's feedback and implementation of changes to suit the user's needs.

The agile method mostly has been adopted in developing software and other library projects such as in the collection development of a library because it was observed to maximize the impact of the library's financial resources as well as enable the development of new skills by the library staff (Stanford, Gillis & Cohn, 2019). Babatope, Idowu, Agwu and Dumbiri (2022) study also stated its use in developing an integrated library management system at the University of Ibadan, Nigeria. There are so many types of agile methodology but the nine common types include Scrum, Kanban, Feature-driven development (FDD), Behaviour-driven development (BDD), Lean development, Adaptive software development (ASD), Crystal, extreme programming (XP) and dynamic systems development method (DSDM). All these types have their features, principles, life cycle, roles, specifications, advantages and disadvantages which should be considered when choosing a method to be adopted for project management in any library. The method must not be adopted, rather, it can be adapted with a few modifications to suit the library's needs. Given the variety of projects handled by libraries on regular bases, experimenting with different aspects, processes and techniques of the agile method is a good process (Holder, 2018).

The agile method can be used to create many types of innovative library services for the best productivity. Innovative services such as the use of OPAC/ Web OPAC, Audio Video facility, Web 2.0 (Library 2.0), Current Awareness services, Internet services, Document Delivery Service and Interlibrary Loans can also be created using the Agile method (Tiwari, 2016). As stated by Etebu and Zacchaeus (2020) innovative services such as virtual reference, embedded librarianship, entrepreneurship education, and online business support service among others can be initiated in the library system to enable fulfilled user feedback. In a Massive Open Online Course (MOOC) developed by Serap Kurbanoglu to help library and information professionals to use various models to design and develop innovative cultural heritage services. Different innovative services were sighted to have been developed by some libraries using the agile method. Some of these innovative services include; digital stories and the ibeacons app, Crowdsourcing and involvement of volunteers in a digitization project, **The George Washington (GW) University Libraries, leveraged an agile approach in their collection development, University of California, Los Angeles (UCLA) built their digital library using an agile methodology, the UC San Diego Campus (UCSD) libraries used an agile approach to develop a library mobile website and the Tampere University of Technology Library considered the adoption of the method into its project development process in 2012 as the most effective and relevant among others (Serap, 2020).**

The benefits of the Agile method were also noted in the MOOC to include appreciating the needs of the customers, eliminating waste, quality assurance, ability to redesign and make decisions fast and empowering the team. GW Libraries experienced some specific benefits when they started using Agile methodologies and techniques, some of these benefits include that it can help organizations adapt quickly to change, the ability to manage changing priorities helps to create readiness for change among librarians and library staff, it is adaptable and lightweight, promotes visibility, breaking down knowledge silos (Waugh, 2018). The agile method helps in sharing work in progress, in the visualization of work to enable prompt

feedback, creating more viable services, it helps libraries to identify ways to continuously improve, promotes the importance of self-organizing teams that are responsible and accountable (CollabNet VersionOne, 2018). This approach can help staff build confidence in their ability to collaborate with their colleagues to engage in meaningful and valuable work, promote teamwork and teambuilding and can create leadership opportunities as well as improve morale among others (Stoddard, Gillis, & Cohn, 2019).

The use of the agile method could be faced with some challenges as not every library stakeholder may be willing to adapt to the process and not all library personnel may be conversant with or ready to adjust to the method. Although Miller (2013) stated that, the challenges associated with implementing the agile method are mostly related to applying a different approach to project management in an organization. They stated a few specific challenges that include, inadequate experience with agile methods, company philosophy or culture at odds with agile values and little understanding of the required broader organizational change. Other challenges are Lack of culture transition, lack of transparency, large projects, lack of commitment by customers, poor documentation, process not understood, project complexity, too many meetings, regression testing, too many unplanned tasks, limited customer availability, reluctance in making necessary process changes, incorrect budget and time estimates resulting due to constant changing requests, contractual limitations which do not allow for unspecified project adjustments, and disagreements on functional requirements which often occur among the testers or users among others (Inayat, Salim, Marczak, Daneva, and Shamshirband, 2015 & Jeffrey, 2018). Considering the benefits of the agile method, it's pertinent to devise means of tackling these challenges and uphold best practices.

## **Methodology**

This paper investigated the application of Agile Methods in Building Innovative Library services in University Libraries. The study is a descriptive survey research design. A structured web-based questionnaire and a structured interview schedule were the instruments for data collection. The questionnaire collected data for research questions 1, 3 and 4 from the librarians that were part of the process. The questionnaire was developed on 5 points Likert rating scale of Strongly Agree- SA (5), Agree - A (4), Undecided -U (3), Disagree - D(2) and Strongly Disagree - SD (1). Respondents were required to click an option for one item based on their level of agreement. Research question one has eight items, research question 3 has ten items and research question 4 has eight items. The structured interview schedule sourced information from 3 Librarians each from the two libraries who were part of the team that worked directly with the software developer. The three librarians were randomly selected for the interview. Research question two was used to probe into the interviewee's views and explanations on the types of innovative services created using the agile method in their library.

The total population of this study was 41 librarians from the two selected University libraries, 27 librarians from Prof. Festus Aghagbo Nwakor Library, Nnamdi Azikiwe University, Awka, Anambra State and 17 librarians from Donald E.U. Ekong Library, University of Port Harcourt, Rivers State. The entire population size is small and manageable therefore, the researchers adopted the total enumeration sampling technique and studied the entire population. The web-based questionnaire link was shared with each of the respondents with constant reminders which necessitated a 100% response rate. It took up to three weeks to achieve 100% completion of the questionnaire and carry out the interview due to the tight schedule of most of the respondents. Data collected were analyzed using descriptive statistics

such as mean, percentages and a thematic analysis procedure for the interview. Tables and frequency counts were used for data presentation.

### Results

A total of 41 questionnaires were distributed to librarians in the two University Libraries in Anambra and Rivers State. The data obtained from the respondents were analysed and presented in the tables as follows:

**Table 1:** Respondents' distribution according to their libraries

/N	Items	No of Librarians	%
.	Prof. Festus Aghagbo Nwakor Library, Nnamdi Azikiwe University, Awka, Anambra State (PFANL).	24	59%
.	Donald E.U. Ekong Library, University of Port Harcourt, Rivers State (PDEUEL)	17	41%
	Response Rate	<b>41</b>	<b>100%</b>

Table 1 above shows the response rate of the librarians according to their libraries. We have 24 librarians from Prof. Festus Aghagbo Nwakor Library, Nnamdi Azikiwe University, Awka, Anambra State (PFANL) that responded to the survey which is approximately 59% of the entire study population, while we have 17 librarians from Donald E.U. Ekong Library, University of Port Harcourt, Rivers State (PDEUEL) that also responded to the survey which is approximately 41% of the entire study population. This sums up to 41 Librarians, showing a 100% response rate.

### Research question 1: What is the use of the agile method in creating innovative library services?

**Table 2:** Responses on the use of the agile method in creating innovative library services.

S/N	Items	N	Mean	Decision
1.	To prioritize Flexibility	41	3.93	Agreed
2.	Easy adaptation to technological advancement by libraries	41	4.32	Agreed
3.	Empowering the development team	41	4.05	Agreed
4.	Easy adaptation to change	41	4.12	Agreed
5.	Quality Assurance	41	4.15	Agreed
6.	Early Identification of Uncertainties	41	3.98	Agreed
7.	Re-prioritize how resources are allocated	41	4.02	Agreed
8.	Elimination of waste	41	4.02	Agreed

Table 2 above shows the result of responses on the use of the agile method in creating innovative library services. The result shows that the majority of the librarians agreed that the agile method is used for easy adaptation to technological advancement by libraries (4.32), Quality assurance (4.15), Easy adaptation to change (4.12), Empowering the development team (4.05), to re-prioritize how resources are allocated (4.02), Elimination of waste (4.02), Early identification of uncertainties (3.38) and prioritize flexibility (3.93).

**Research question 2: What are the types of innovative services created using the agile method in your library? Please explain.**

**Table 3:** Librarians’ Interview responses on the types of innovative services created using the agile method.

S/N	In-person Interview Verbatim Quotes	Library	Theme
1.	“We were carried along by the software developer in our library while they were setting up our institutional repository”.	PFANL	Institutional Repository
3.	“The only time I knew the agile method was applied in our library was after the setting up of our institutional repository, our University librarian selected ten librarians that was trained by the software developers on how to handle the repository. These six librarians later trained other librarians in the library”.	PFANL	Capacity building
4.	“During the past administration, It was applied to our traditional way of work during the installation of the KOHA software system. After then, we were shared in focus groups while the installation of the system in other sections (circulation, collection development, and Reader's services of the library kicked off. We were directed to make use of it and inform them of any needed features to be added or features that are irrelevant to the services of the library”.	PFANL	Collection development, Immediate feedback to users after rendering services, Reader's services
5.	“We Provide E-Library services to our users through the established institutional repository and these services enabled a collaborative workflow in our library. Other services like the reference management services were also established for our Library users”.	PDEUEL	E-resources, Collaborative workflow, Reference management services
6.	“The method was applied during our transition from manual cataloguing to OPAC. We were trained on how to make use of it as well as guide our library users. Reports of the training were sent back to our University Librarian at the end of each workshop”.	PDEUEL	Library website. It assisted in the change from manual search to online search for information (OPAC)



7. “Our library is also in the process of developing a mobile library app and we are being carried along at every stage to test the features of the app and give feedback on its suitability to serve our users' needs”.
- PDEUEL Library mobile app development.

As shown in Table 3 above were the result of the responses from each of the three interviewees from the two University libraries. PFANL mentioned different types of innovative services that were created using the agile method in their library to include Institutional Repository, capacity building, collection development, immediate feedback and changes and Reader's services while PDEUEL mentioned their to include, services with E-resources, collaborative workflow, reference management services, Library website, online search for information (OPAC) and Library mobile app development.

**Research question 3: Are there benefits of agile methods in creating innovative library services?**

**Table 4:** Responses on the benefits of agile methods in creating innovative library services.

S/N	Items	N	Mean	Decision
1.	Build strong teams	41	4.30	Agreed
2.	Enable staff development of new skills	41	4.37	Agreed
3.	Ensure end users receive the best customer service	41	4.20	Agreed
4.	Information Technology services are continually improved	41	4.22	Agreed
5.	Enables the ability to redesign and make decisions faster	41	4.17	Agreed
6.	Maximizes the impact of the library's financial resources	41	4.05	Agreed
7.	Creation of viable products by Librarians	41	4.29	Agreed
8.	It surfaces values and highlights differences	41	4.00	Agreed
9.	Enable the avoidance of knowledge silos	41	4.10	Agreed
10.	Enable new changes in features through customer feedback	41	4.20	Agreed

Table 4 above shows the results of the responses on the benefits of using agile methods. The librarians agreed that it; enables staff development of new skills (4.37), builds strong teams (4.30), creation of viable products by Librarians (4.29), Information Technology services are continually improved (4.22), ensures end users receive the best customer service (4.20), enable new changes in features through customer's feedback (4.20), enables the ability to redesign and make decisions faster (4.17), Enable the avoidance of knowledge silos (4.10), maximizes the impact of the library's financial resources (4.05) and It surfaces values and highlights differences (4.00).

**Research question 4:** What are the challenges of using the agile method in creating innovative library services?

**Table 5:** Responses on the challenges of using the agile method in creating innovative library services.

S/N	Items	N	Mean	Decision
1.	Discomfort with working under transparent conditions	41	3.83	Agreed
2.	Resources and effort requirements are difficult to estimate for complex projects	41	4.20	Agreed
3.	Resistance to change	41	4.22	Agreed
4.	Documentation is less	41	4.66	Agreed
5.	Dependencies between team members	41	4.68	Agreed
6.	Non-essential information and meetings	41	4.54	Agreed
7.	Risk of ever-lasting projects due to the ever-evolving features	41	4.00	Agreed
8.	Difficulty in predicting expected results due to unclear requirements	41	3.90	Agreed

Table 5 above shows the results of responses on the librarians' level of agreement on the different challenges of creating innovative services with agile methods. They agreed that there may be dependencies between team members (4.68), documentation becomes less (4.66), Non-essential information and meetings (4.54), resistance to change (4.22), resources and effort requirements are difficult to estimate for complex projects (4.20), risk of ever-lasting projects due to the ever-evolving features (4.00), difficulty in predicting expected results due to unclear requirements (3.90) and discomfort with working under transparent conditions (3.83).

### Discussion

We have 24 librarians from Prof. Festus Aghagbo Nwakor Library, Nnamdi Azikiwe University, Awka, Anambra State (PFANL) that responded to the survey which is approximately 59% of the entire study population, while we have 17 librarians from Donald E.U. Ekong Library, University of Port Harcourt, Rivers State (PDEUEL) that also responded to the survey which is approximately 41% of the entire study population. This sums up to 41 Librarians, showing a 100% response rate.

### Use of the agile method in creating innovative library services

Findings on the use of the agile method in creating innovative library services, shows that the majority of the librarians agreed that the agile method is used for easy adaptation to technological advancement by libraries at the mean rate of (4.32), followed by Quality assurance (4.15), easy adaptation to change (4.12), empowering the development team (4.05), to re-prioritize how resources are allocated (4.02), elimination of waste (4.02), Early identification of uncertainties (3.38) and prioritize flexibility (3.93). The respondents agreed to all the items listed, which shows what agile methodology can be used to do while creating innovative services in the libraries studied.

### Types of innovative services created using the agile method

The responses from each of the three interviewees from the two University libraries revealed the different types of innovative services created in PFANL to include, Institutional Repository, capacity building, collection development, immediate feedback and changes and

Reader's services while PDEUEL mentioned theirs to include, services with E-resources, collaborative workflow, reference management services, Library website, online search for information (OPAC) and Library mobile app development. Interview was used for this question to get the actual opinion of the interviewee and their perception on the activities of the existence of agile method in handling their library projects. The findings revealed active and happy use of the method though without some challenges. Some of the project developments are still in progress while some had already been completed. The finding is in line with the study by Tiwari (2016) and Serap (2020) which also listed OPAC/ Web OPAC, website development and mobile app as the types of innovative library services built with agile method.

### **Benefits of using agile methods in creating the innovative library services**

Findings of the benefits of using agile methods in creating innovative library services revealed that majority of the librarians agreed that agile method is beneficial in enabling staff develop new skills at the mean rate of (4.37), building strong teams at the mean rate of (4.30), creation of viable products and services by Librarians at the mean rate of (4.29), continuous improvement on Information Technology services at the mean rate of (4.22), ensuring end users receive the best customer service (4.20), enable new changes in features through customer's feedback (4.20), enables the ability to redesign and make decisions faster (4.17), Enable the avoidance of knowledge silos (4.10), maximizes the impact of the library's financial resources (4.05) and surfacing values and highlights differences (4.00). This finding revealed the magnitude of the agile method benefits as none of the librarians disagreed to any of the benefits which is evident with the high mean scores. The findings corroborates the study by Waugh (2018) which also listed creation of viable product, breaking knowledge silos and staff development of new skills among others as the benefits of the agile method. It further inline with the study by Morgan, et al (2019) which stated team support and building of strong team as one of the major benefits of the agile method.

### **Challenges of using the agile method in creating innovative library services**

The findings on the challenges of using agile method by the librarians' revealed the agreement of the majority that their may be high dependencies between team members with the mean rate of (4.68). They also agreed that documentation will become less with the mean rate of (4.66), that there will be constant non-essential or contentless meetings with the mean rate of (4.54). The study further revealed the possibility of resistance to change among teams (4.22), that resources and effort requirements are mostly difficult to estimate for complex projects due to the constant changes in features with the mean rate of (4.20), the risk of everlasting projects due to the ever-evolving features (4.00), difficulty in predicting expected results due to unclear requirements (3.90) and teams may feel uncomfortable working under transparent conditions (3.83). The finding is in line with the study by Miller (2013) who also stated inadequate experience with the agile method as one of the challenges of using agile method. This finding supports the study by Inayat, et al (2015) that also listed lack of transparency, large projects and project complexity among others as part of a few challenges of using the agile method.

### **Conclusion**

Based on the results of the research, it was concluded that the agile method is a good way to promote a healthy working environment and develop an inclusive, innovative and user-centred service delivery. The agile method is used for easy adaptation to technological advancement, quality assurance and empowering of the development team among others in the library. There are so many benefits associated with the use of the agile method in creating innovative services which include the creation of viable products and the development of new

skills among libraries which is prompted through the activation of knowledge sharing among team members. Different types of innovative services are created through the Agile method although the adoption of this method can be faced with some challenges which include dependencies between team members, risk of ever-lasting projects due to the ever-evolving features and difficulty in predicting expected results due to unclear requirements among others. In all, the benefits outweigh the challenges if managed well.

### **Recommendation**

Based on the findings of this research, the following recommendations were made:

1. Looking at all the things the agile method can be used for in a library, it is relevant for library managers such as university librarians, college librarians and other stakeholders of the library to equip themselves with advanced knowledge of the agile method to enable adoption of the process and procedures for a productive running of their libraries.
2. Agile method can be adopted by library management to build more innovative, user-centred and viable products and services that can best satisfy their user's needs. Librarians should be trained on how best to leverage the agile method in drawing up ideas for good services, developing effective communication through collaborative practices, and building better working relationships with their colleagues.
3. Due to the impressive benefits of using agile methods in creating innovative services, the university management should adopt and implement the method in the whole school system and not just in the library to avoid knowledge silos, maximize the impact of the library's financial resources no matter how limited and ensure end-users receive the best customer service.

**AWARENESS AND PRE-KNOWLEDGE OF THE AGILE METHOD SHOULD BE CREATED TO EQUIP THE ADMINISTRATION ON HOW BEST TO ADAPT AND MANAGE THEIR ROUTINE TO AVOID THE CHALLENGES ASSOCIATED WITH THE METHOD. CERTAINLY, NOT ALL STAFF CAN PROCESS AND ADAPT WITH THE SAME SPEED SO THE TRAINING PROCESS CAN LINGER A WHILE UNTIL EVERY STAFF UNDERSTANDS HOW TO USE THESE TECHNOLOGIES. INDIVIDUAL DIFFERENCES IN LEARNING AND SKILLS SHOULD BE CONSIDERED AND LIBRARIANS SHOULD BE INVOLVED AT EVERY STAGE IN THE PROCESS.**

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