ASHESI UNIVERSITY

A DESCRIPTIVE STUDY ON THE APPLICATION OF PROJECT MANAGEMENT TOOLS IN ORGANIZATIONS IN GHANA.

UNDERGRADUATE THESIS

Management Information Systems

Yaa Korang Gyapong

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UNDERGRADUATE THESIS

Undergraduate Thesis submitted to the Department of Computer Science and Information Systems, Ashesi University in partial fulfillment of the requirements for the award of Bachelor of Science degree in Management Information Systems.

Yaa Korang Gyapong

2020

DECLARATION

I hereby declare that this thesis is my original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's signature:…….

Candidate's name: Yaa Korang Gyapong

Date: April 2020

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by Ashesi University.

Supervisor's signature:……

Supervisor's name: Dr. Stephane Nwolley

Date: December 2020

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Abstract

The introduction of project management tool into firms have catalyzed tremendous increases in the success rates of projects worldwide. The six key processes; Initiation, Planning, Execution, Monitoring, Controlling and Closing, that ensure the effective implementation of all projects have proven time and again to be one of the best guidelines in achieving this feat.

Over time, various groups have postulated theories and developed tools that aim to ensure the effective execution of each of these six stages. These tools advanced efficiencies in completing projects, maximize limited resources such as time, human and capital resources, as well as gain a high reputation and standings in society for completing projects [5].

Although these tools in isolation have aided project managers in successfully meeting the triple constraints of time, scope and quality, there still begs a need to push for the practice and use of project management tools in a more deliberate way, that will guide agile project managing companies to achieve their goals. In Ghana today, there is a grave lacking in project management professionalism which has heavily impacted the way projects are executed and managed. McKinsey Digital suggests project cost overruns of about 45% with 56% less value output than expected in large IT firms across the world [1].

This study aims at exploring other implications of and various benefits associated with the use of project management tools in Ghana. I believe that there needs to be a holistic understanding of and presentation of these tools in a manner that best suits the Ghanaian context and culture to ensure that projects are executed professionally.

Furthermore I aim at developing a model framework of a holistic project management tool that addresses and guides the six key stages of a project to achieve project success and reduce the level of project failure in Ghana.

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List of Abbreviations

Abbreviation	Full meaning
PMI	Project Management Institute
PMP	Project Management Professional
PM	Project Manager/Management
PMT	Project Management tool
PDLC	Project Development Life cycle

Chapter 1: Introduction

1.1: The Introduction and Background

While the knowledge and adoption of project management concepts, theories and tools are advancing considerably, it is almost as though these strides are solely recognized in academia and are hardly appreciated in practice or reality here in Ghana. This could cause one to wonder why firms, organizations and individuals, in general, may be so reluctant to adopt these practices or to integrate them into their activities despite academic proof of increased efficiency and success rates.

Some scholars and researchers have attributed this issue to possibilities such as globalization and an increase in competition. It is explained that although globalization and high competition often leads to the production of quality goods and services, the idea concerning project management tools has left the market crowded and jam-packed with so many products, leaving the consumer confused and reluctant to commit to one product or the other.

Another school of thought suggests cost as a recurring issue. Cost in this context is defined to include all expenses or value trade-offs involved in acquiring and integrating the new technology in question into business processes. This will include the cost of training employees to use the technology, the cost of maintaining the technology through updates and additional features as well as what seems to be the main cost focus; acquiring the most efficient and value-providing software among the lot on the market.

Thirdly, it is proposed that some employees may struggle to integrate the new proposed software into their daily routines due to problems associated with Human-Computer Interaction.

This can be a range of problems including but not limited to multiple complicated user level requirements, inadequate required features, struggles associated with breaking into new technology, privacy and security issues as well as basic user experience related issues.

1.2 The Research Problem and Problem Statement

Research according to the Ghanaian chapter of the Project Management Institute (PMI) indicates as at the beginning of the last decade, that official project management regulations and the practices thereof seemed an alienated subject to a good majority of the Ghanaian population. It wasn't until the setting up and chartering of the PMI chapter in Ghana, that efforts begun to ensure that the right standards, proper practicing and implementation principles of project management are realized and actualized in executing a project.

Some of these principles include the provision of professional learning experiences and exposure to various project management tools, world-class accreditations and membership opportunities as well as exposure to various webinars and seminars that guide the advancement of professionalism in project management.

The problem that is currently being faced across project management companies in Ghana, specifically those that choose to practice under the agile branch of project management is that although there have been tremendous improvements in the planning, scheduling, management and overall execution of projects, there are still records of projects that turn out to

be failures. It is estimated that an alarming 70% of project failures are still being recorded, alluding to a grave waste in scarce resources at the end of the day.

To a large extent this issue can be attributed to the poor management of multiple projects by a firm at the same time, failure of project management firms to produce enough revenue to sustain the company, a lack of adequate user training and involvement as well as the poor allocation and estimation of resources. Thus, there is a need for the access to a project management model that encompasses and highlights the various tools and techniques that specifically target these problems to curb the issue of project failures in Ghana.

1.3: The Research Question

While research shows that the creation of PMI chapter in Ghana was an instrumental step in curbing the problem of project failure in Ghana, there still exists a need for the key project management processes to be highlighted for business results to be improved. One way by which this can be achieved is through showcasing the benefits, capabilities and impacts on business processes associated with employing these processes through the use of project management tools. This thesis, therefore, intends to investigate; **"*how will project management organizations align their strategies to achieve positive environmental results in making use of relevant project management tools and frameworks in executing projects?*"**

1.4: The Research Objectives

To carry out this investigation successfully, the aims and objectives of this research process have been categorized into three main phases, that will govern the structure and presentation of findings in this paper. These categories are;

A. To investigate the extent to which project management has been adopted amongst Ghanaian organizations: This portion of the research first and foremost seeks to understand the caliber and categories of persons that engage project management tools on various levels. It also aims to assess the extent to which these groups of people can appreciate the various tools and frameworks that they may have encountered in their aim to carry out a project, and identify how often they engage these tools.

B. To Determine the contributing factors that impede the adoption of project management tools in Ghana: This aspect of the research aims to gather concerns, setbacks and impediments that have poorly impacted the overall user experience and patronage of project management tools and frameworks.

   It also aims at understanding general sentiments and user expectations of an ideal project management tool for use.

C. To build a model framework for the adoption and implementation of project management tools in Ghana: This aspect of the paper aims to showcase an ideal project management tool for use. This portion would capitalize on the constructive feedback presented by the users based on their experience and interaction with some highly ranked project management tools, to create the "master tool".

Chapter 2: Literature Review And Related Works

In his article "Project management in Ghana: expectations, realities and barriers to use", Venter reports the findings of an empirical study of problems associated with developing Project Management (PM) practices in Ghanaian organizations. He explains that the features of the project development life cycle (PDLC) are used as a basis to examine the nature, type and severity of the problems faced by these organizations that seek to undertake or manage projects. He ultimately concludes that although PM is important, its practice in Ghana has been faced with problems and recommends that further research in the field be carried out to gauge the attitudes and opinions of people involved in projects in Ghana [11].

Oak attributes project management issues in the IT industry to management issues of unrealistic deadlines, communication deficits, scope creeps and failure in risk management among other things. He explains, saying "These challenges can lead a project to failure or can lead to schedule and or budget overruns. As per a survey done in 2011 just for IT industry projects, it was observed that only 37 % of projects were completed as per the original plan, the rest of the projects either were challenged and exceeded the original baseline OR got scrapped."[7]. These statistics go to show that organizations need to manage projects efficiently and effectively. He finally outlines six major independent variables; stakeholder management, baseline definition (scope, schedule, cost and quality), communication management, human resources and their skillset, risk and issue management, project control methodology, which he believe has great impacts the success of the project if not managed properly.

Ofori in his studies and publications sought to identify and assess the quality of project management practices as well as the critical success factors for projects in Ghana.

In his submission on "Project Management Practices and Critical Success Factors–A Developing Country Perspective" Ofori adopts an exploratory approach and utilized a survey method to collect data on project management practices of Ghanaian organizations. Purposive sampling was used in selecting the sample which comprised 200 managers from different economic sectors.

Results from the study indicated that the critical factors that contribute to the success of a project include top management support, effective communication, clarity of project purpose and goals, and stakeholder involvement. Documentation and dissemination of critical success factors and best practices in project management will improve the quality of project management in Ghana. The absence of a structured system of documentation of project management practices among Ghanaian project managers has resulted in a dearth of empirical data. The inability of the researchers to sample organizations across Ghana is considered as one of the study's limitations, an example of a geographical constraint. This research focused on the key factors and best practices that lead to the success of projects in Ghana [8].

Chapter 3: Approach And Methodology

3.1: The Introduction

As previously stated, the purpose of this study is to investigate the extent to which project management has been adopted in Ghana and to understand factors that impede the adoption of project management tools and techniques within the country. This chapter is made up of the approach and methodology, that has been categorized into the following subsections: the quantitative paradigm, data collection techniques and the action plan towards developing a model framework for the adoption and implementation in Ghana.

3.2: The Paradigms of Research

The paradigm for data collection and analysis will be based, primarily on qualitative data, although some quantitative analysis will be carried out in the form of secondary data analysis. To achieve the objectives detailed above, there needs to be a descriptive understanding and interpretation of the data, to ensure an expository analysis of the true experiences of the user.

3.3: The Data Collection Techniques

The major data collection techniques that will be employed during this process will be purposive sampling, analysis of secondary data as well as focus group discussions.

This is to understand various groups of people and their responses to the use of project

management techniques; especially the tools.

Purposive sampling is a form of non-probabilistic sampling in which the researcher will develop a population pool based on their judgment when choosing the members of this pool. The main aim of purposive sampling is to allow the researcher to focus on specific characteristics of the population that will provide the most insight into the research field. This will allow the formation of a requirements analysis for the development of the model, based on specific needs.

Similarly, organizing focus group discussions for data collection will be an instrumental way to gather people from similar backgrounds and expertise in the field of study, to share their views and contributions to the subject matter. This will allow for the guided and informed making of decisions when developing the model, while gaining insight into the other areas of this research.

Lastly, there will be a focus on analyzing secondary data retrieved from journal and article publications of other researchers who have made contributions to this field of study before this.

3.4: The Action Plan; The PM Comprehensive Tool

The project Management Comprehensive Tool (PMCT) will be a model framework that makes use of theoretical concepts and algorithms to develop a master tool for agile project management in Ghana. This tool aims to improve efficiency within the six key project management processes of Initiation, Planning, Execution, Monitoring, Controlling and Closing.

The PMCT will feature on key functionality systems such as time management tools for multiple projects at a time, resource allocations and costing assessments, the likelihood of project failure or success predictions based on scope and time frame, as well as all other functionality and non-functionality requirements that will be developed after all data has been collected and analyzed.

Chapter 4: Data Collection And Analysis

4.1: Data Collection and Findings.

It is well understood that there are a wide variety of tools and software in excess supply on the market that boast various features and advantages, one over the other. Some of these tools include Taskworld, Trello, Asana, Bitrix24 and Quire to name a few. Among the lot on the market, it was identified that these five tools ranked among some of the most inclusive and patronized tools among a broad spectrum of users.

4.2: Establishing a control

For this study, these five tools; Taskworld, Trello, Asana, Bitrix24 and Quire were assumed to be the only players in the project management tool industry and all conclusions and analysis and were be based on first and secondary data reviews of these tools.

The table in Appendix B shows a compilation of general feature comparisons of the five tools, according to Crozdesk; a business software search engine that provides constructive analysis, guides and reports on over two hundred and seventy business software.

These tools were assessed based on various features, functionalities and general user experience and interaction among a wide pool of users worldwide. They were rated and recommended for use, thus it came as no surprise when a good majority of the primary data sample that had interacted with project management tools had heard of or engaged at least one of these tools in one way or the other.

These conclusions are made based on in-depth research analysis and compilation of a large pool of user experiences as well as based on expert judgment on the matter. The information gathered from this search engine served as an additional guide in understanding the complex interplay of user and system demands and also served as a guide to understanding some of the responses that arose when interacting with the primary data sample.

4.3: Categories among the primary data sample

To broadly understand and asses the nature of the problem at hand, two categories of people were identified and studied. The first group of people considered for this research constituted undergraduate college students. This is because they are among a group of people in a phase of their lives, that are likely to be embarking on team and individual projects for the first time, thus would likely be introduced to project or task management techniques, as efficient ways of managing these projects.

For the advancement of this paper, this group of people are classified as lower-level users, and are not likely to engage the tool beyond the free version issued out by the program developers.

Some three hundred and seventy-five students of Ashesi university's one thousand one hundred and seventy-three students; one of Africa's top tertiary institutions were asked simple questions about project management via interview, focus group discussions and surveys, to understand their level of engagement with project management tools and techniques.

Of this population, a valid sample of three hundred results were considered for the study.

Of the pool of students that were engaged, 62.4% (Figure 1.0) expressed that they had heard about the use of project management tools and techniques. 38% (Figure 2.0) of the lot were familiar with at least one of the five selected project management tools, and 35.6% (Figure 3.0) of these persons had actively used and engaged any of these tools.

For those that had neither ever heard of nor engaged any of the tools, 67.2% expressed that the idea of project management tools had never been introduced to them, while 31% expressed that the idea was simply not involved in their field of study (Figure 4.0). With further respect to the reason for which these students had never engaged any project management tools, other notable reasons involved ambiguity on which tool to use, a lack of user-desired features on their preferred tools and a poor user interaction experience with the tool.

Furthermore, the findings showed that the most popularly known and engaged project management tool among the students was Trello, which led to conducting a series of focus group discussions to try to understand why this was so (figure 5.0).

In a focus group discussion with two different groups of students of about six to eight members each, it was explained that Trello was simply recommended to them by colleagues who had used the software.

These were MIS and BA major students who had engaged in various project management courses or were in the process of completing final group projects towards the end of the academic semester.

They expressed that besides being a “household name”, they also used and recommended Trello because it was easy to interact with and light on their pockets as students. It had just enough functional and technical requirements to meet their needs, even though they wished it had more features, as referenced in the appendix section of this paper.

They expressed as well that using a project management tool allowed them to better manage tasks and schedules, and allowed them to be easily accountable to one another. Even though they were not able to confirm what manner of impact this had on the quality of their projects in comparison to other teams that may not have used a task management software, the teams were able to confirm that they were able to work smarter and more efficiently; saving time to engage other activities and assignments on campus.

The second category of people whose views were studied were project managers and experts in the field, who had embarked on longer-term projects spanning a minimum of six months. These were persons who were likely to engage updated or proprietary versions of the software because they required higher-level features and were likely to be able to afford and patronize these features. Some of these persons included Administrative Health Care Personnel, Project managers in telecommunication companies as well as professional software developers.

Conversations with these higher-level users took the form of in-depth interviews whereby the experts explained their various sentiments and concerns about the use of project management tools and the various implications on their field of work, highlighting some key concerns such as cost-related issues, concerns about user experience as well as the inability of the software development companies to provide training services on proprietary versions of the software.

For example, in a discussion with the then project manager for a telecommunications company; Tigo Ghana, now AirtelTigo, the ex-manager explained that the biggest issue he and his colleagues faced with project management tools that they encountered were mostly cost-related.

He explained that it became more and more costly to the company to constantly update proprietary versions of the various software because this involved high costs associated with organizing trainings and workshops to re-train employees. He further explained, that the impact of these cost setbacks was gravely felt because it was difficult to break the monotony of some employee work ethic and habits, rendering what could have been an important investment in their work culture and overall success, redundant.

In engaging this conversation from the point of view of a software developer, he explained that the use of a project management tool in managing his tasks were helpful as far as basic planning and scheduling could go. He expressed that the nature of his work required extensive features that allowed him to do more than just observe how near or far he was to completing his tasks and who had been assigned to which task. He later went on to confess, that he can understand the complexity in developing a "master tool" or framework for use because of the beckoning disparity between dreams and functional and technical feasibilities.

In concluding his sentiments, he admitted to realizing a need for project management tools and frameworks in planning, organizing, scheduling and gaining a general overview of project cycles, and recommended the continual use of project management tools and techniques in other fields and firms if they wished to see an overall improvement in the way that projects are managed.

4.4: The Secondary data analysis.

In July 2016, a paper was submitted to the International Conference on Internet studies in Osaka, Japan, by two professors at American universities; Charlie C. Chen of Appalachian State University and Makoto Nakayama of DePaul University. In their paper; "Impact of project Management Tools On Projects Estimates and Benefits", the team sought out to empirically assess the extent to which the use of project management tools in firms and organizations helped to achieve generally improved levels of overall project outcomes [6].

In line with the purpose of this study, these two professors were equally triggered by the fact that various project management tools and software had been developed and advocated for over the years, yet projects persistently faced significant challenges[6].

In carrying out this research, the professors aimed to put four main hypotheses to the test based on previous research of their own, which were based on the general impact of project management tool use and project risk assessment, project estimation and project success.

These four hypotheses were:

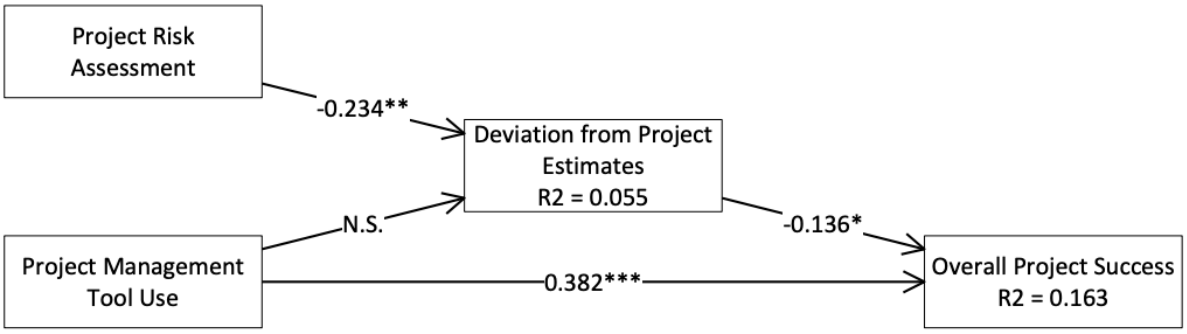
"H1: The extent of project management tool use positively impacts the degree of overall project benefits.

H2: The extent of project management tool use minimizes the deviation from project estimation.

H3: The degree of project risks positively impacts the deviation from project estimation.

H4: The deviation from project estimation negatively impacts the degree of overall project benefits" [6].

To test these hypotheses, the paper suggests that a questionnaire was designed and distributed to two hundred randomly chosen and registered PMPs, and a final sample of 93 valid responses were obtained. According to the paper, the research model was tested using structural equation modeling with partial least squares and the results of the path significance tests were illustrated in the flowchart illustrated below [6].



*: significant at α = 0.10, **: α = 0. 50, ***: α = 0.01

The summary of hypothesis tests were then summarized in the table below. Furthermore, the professors were able to gather the following results[6]:

i. "H1 is strongly supported, given the beta estimate of the path from Project Management Tool Use to Overall Project Success is -0.382 ($p < 0.01$)."

ii. "The path between Project Management Tool Use and Deviation from Project Estimate is not significant. This does not support H2."

iii. "H3 is supported, given the beta estimate of the path between Project Risk Assessment and Deviation from Project Estimate is -0.234 ($p < 0.05$)."

iv. "Deviation from Project Estimate marginally impacted Overall Project Success with the beta estimate of -0.136 at $p < 0.10$. Then, H4 is weakly supported."

In summarizing their findings, they went on to prepare a table of results for their tested hypothesis, which has been illustrated in Table 1.0 below.

Hypothesis	Result
H1: project management tool use → overall project benefits	supported
H2: project management tool use → less estimation deviations	not supported
H3: project risk assessment → less estimation deviations	supported
H4: less estimation deviations → overall project benefits	supported

Table 1.0

4.5: Implications of Findings.

Based on the various types of data collected and studied, it is clear to observe some parallels between project successes and improvements and the use of project management tools in one way or the other.

A general cause for concern among the elements of the primary sources of data was the cost-value structure of the system being put on the market. Even though a good majority recognized that it was important and beneficial to use project management tools to streamline project activities and better track them, one area that was of major concern was the fact that some of these comprehensive tools were very basic and offered close to no value if they were free or at a low cost. On the other hand, they expressed that the proprietary versions were far too expensive and often out of line on their budgets.

Based on the research work carried out by professors Chen and Nagayama, it is possible to conclude a positive correlation between the use of project management tools and the assurance of project success.

They also found in their surveys that these project managers were particularly interested in project management tools that managed the overall planning of the project, resource costs, risk management plans and regulated change control processes.

They were able to put forth that project management tools should be designed in a way that addresses needs based on which stage of the PDLC the user may be on. In addition and line with the sentiments shared by the students in the focus group discussions, Chen and Nagayama's results can explain that project management tools may not necessarily impact the quality or accuracy of work or project estimates, but rather allows the user work more efficiently by providing avenues of for proper planning at the initiation stage.

This can therefore provide an avenue for effective risk assessment and management throughout the project.

In line with findings and conclusions made by Venter, It is also interesting to note that while project management tools go a long way to support and improve the overall experience, outcome and success rates of projects, human behavior and interaction with these tools is an important factor in determining the results.

While these managers and students may engage project management tools on various levels and will like to observe functional requirements on these tools concerning the purpose for which these tools are being designed, there still begs for the need to develop tools and frameworks that are user friendly and cost-effective as well. While these users aim to invest in avenues that have proven academically and empirically to better rates of project success, these tools equally need to be easy to work with and manipulate, to ensure a successful collaboration between tech and human interaction.

Based on these findings and implications, it is, therefore, possible to propose a holistic and comprehensive project management tool for use, that will bridge the gap between empirical evidence of the possibility of improved project success rates and the reality on the ground among the users.

Chapter 5: The Model; PMCT

5.1 The Requirements Overview

The services that a system provides and its possibly associated limitations are generally described as the requirements of the system. These requirements expose into detail the necessities and basic demands of the system and its users, and serves as a guideline to the developer in designing and implementing the software.

Primary users of this tool will be the two categories of people studied in this paper, who lie at extreme ends of the spectrum of project management users. These requirements are being developed in a manner that will cater to the wide spectrum of users.

5.2 Functional Requirements:

- The system must be able to guide the user through the six stages of the PDLC.
- At each stage, the system should recommend and provide the necessary tools and frameworks to organize and collect all the necessary information.
- All tools and frameworks suggested must be basic, worldwide tools approved by the PMI
- The system should allow for various levels of project complexities or proprietary versions.
- The system should be able to provide an avenue for collaborative work and a chat room feature.

5.3 Non-functional requirement

- Performance requirement: This system requires an active internet connection to work. Users must be connected to the internet and must be running a compatible web browser to use the system
- Security Requirement: Since this system may handle sensitive data entries concerning profitable ventures for the individual or organization, security and confidentially is the topmost priority. The system shall be secured with encryptions and use of passwords where necessary with only authorized access. When inactivity is detected for a period, the system will automatically log the user out.
- Usability requirement: The system shall have responsive, user-friendly interfaces. After a fleeting period of guided interaction, a novice user should be able to use the system comfortably with few errors.
- Availability: The system shall be available 99.9% of the time.
- Regulatory requirement: The system must be approved by the necessary boards of any country where it will be used.
- Ethical requirement: Since this system may handle sensitive client information, security and confidentially is the topmost priority. The system shall be secured with encryptions and use of passwords where necessary. When inactivity is detected for a period, the system will automatically log the user out. No confidential information of patients will be shared or sold to third parties.

Chapter 6: Conclusion

In concluding this report, this section details possible improvements, key challenges faced as well as recommendations.

6.1 Challenges

- Time Constraint: A standard grade system such as the proposed PMCT would normally take 6-8 months for a well-organized development team to design and fully implement. This proved quite a tedious challenge as a single designer with some support. As a result, the entire application could not be fully developed.

- Adaptation of International data to a local context: Even though substantial work and research has been done worldwide on the impact of project management tools on firms, businesses and project outcomes, this field of study is still being heavily investigated in developing countries such as Ghana. Thus some portions of the data used; although based on inferences and assumptions, may not mimic the reality on the ground. It is therefore acknowledged that there could be other factors impeding the adaptation of these project management tools in Ghana, despite the concerns about cost, simplicity and basic user experience related issues.

6.2 Future Work

Due to the challenges identified above, the following steps will be implemented in probable future versions of this work.

- Extensive development of the design and features of the PMCT.
- Implementation of the newly designed and developed PMCT.
- Testing of the PMCT on the Ghanaian market to asses consumer responses.

6.3 Conclusions

Project management involves working through effective plans and systematically organizing tasks to achieve a certain goal. It includes defining the project objectives, making schedules and assigning tasks, to accomplish a successful goal. I strongly believe that it is imperative to have a comprehensive framework that allows the user to achieve their goal without compromising on their overall user experience and budget.

There is no doubt, that other factors may cause a hindrance or a certain evasion towards a new concept that seems to have all the solutions packaged and presented in such a wholesome manner. Nevertheless, I strongly believe that if the right tools are adequately and efficiently presented to be employed in the right way, this aversion may be repulsed and move for the improvement of project successes in the country.

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Appendix

Appendix A: student responses and feedback.

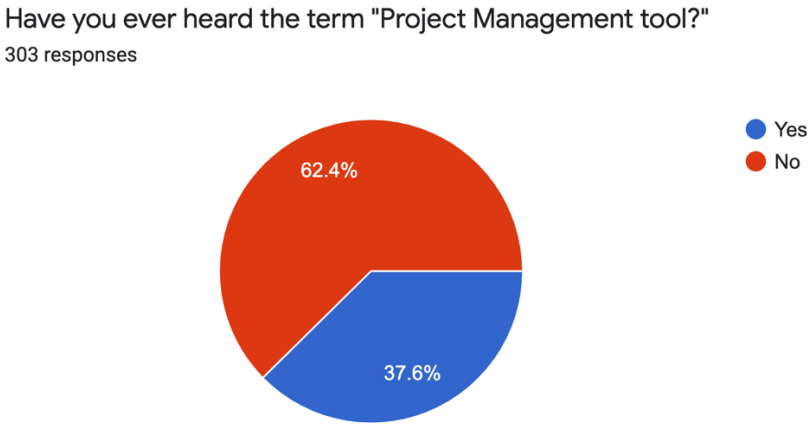

Figure 1.0 general knowledge of project management tools

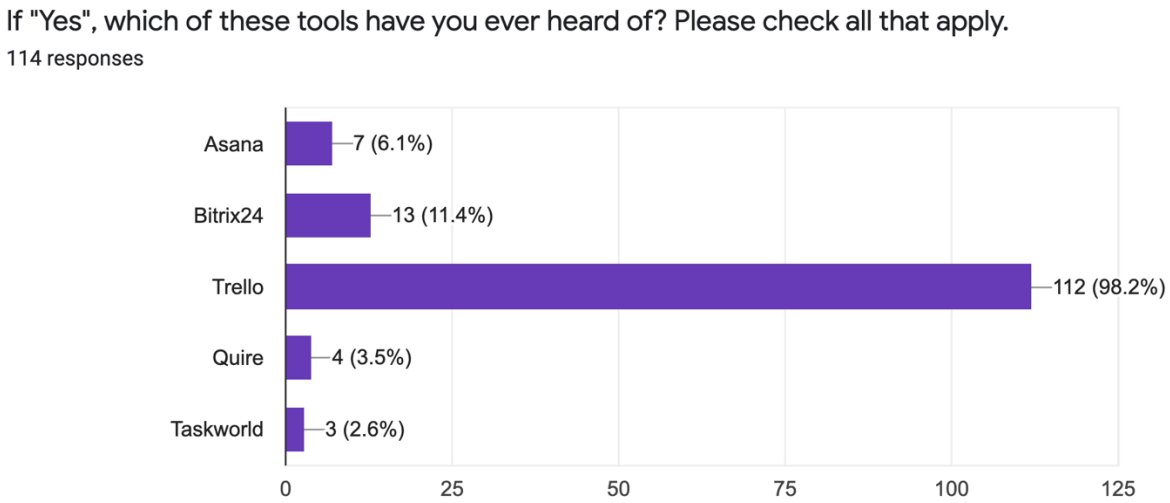

Figure 2.0 familiarity with any of the five tools under study

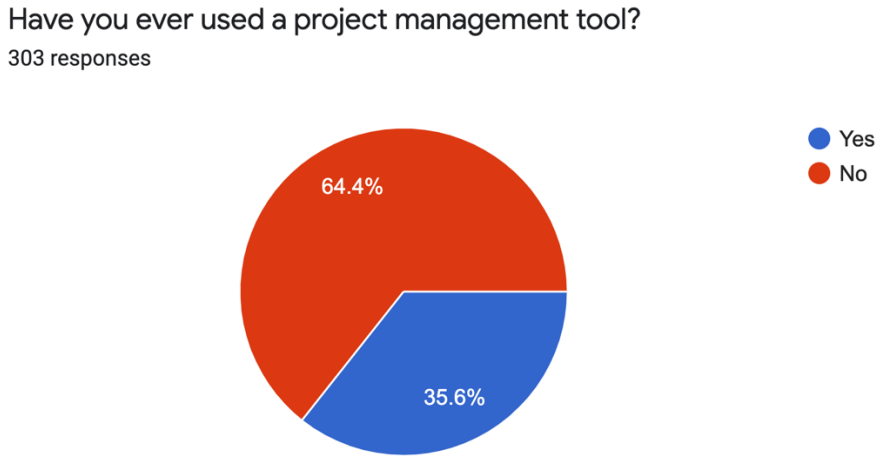

Figure 3.0 frequency of students that have used a project management tool

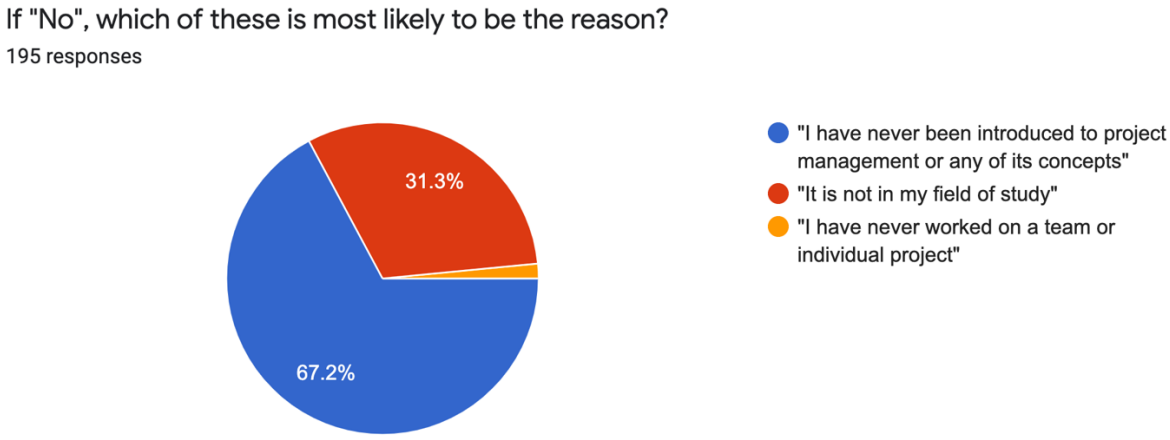

Figure 4.0 reasons for never having heard of project management tool.

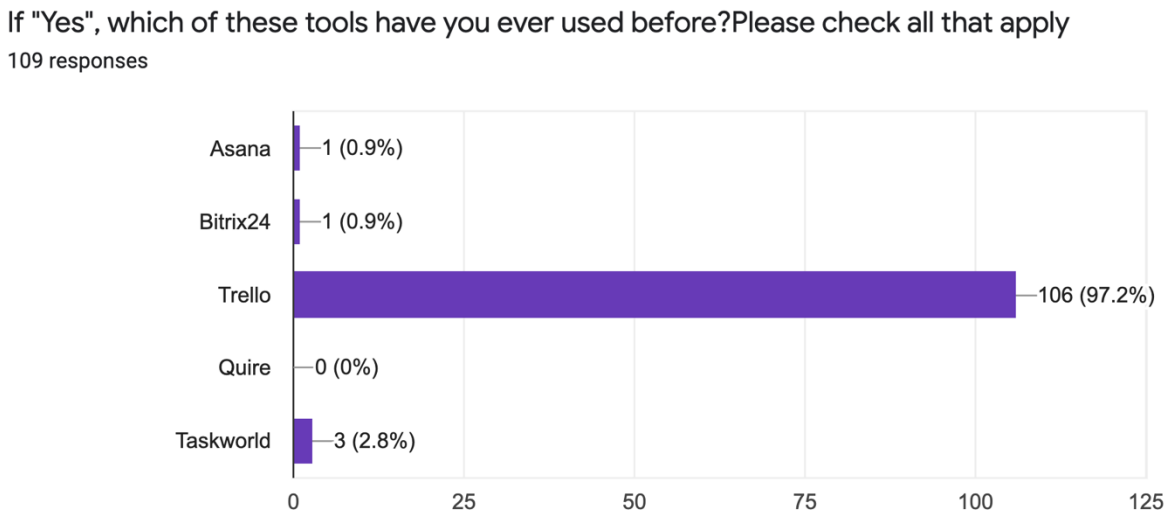

Figure 5.0 popularity of used tools among students.

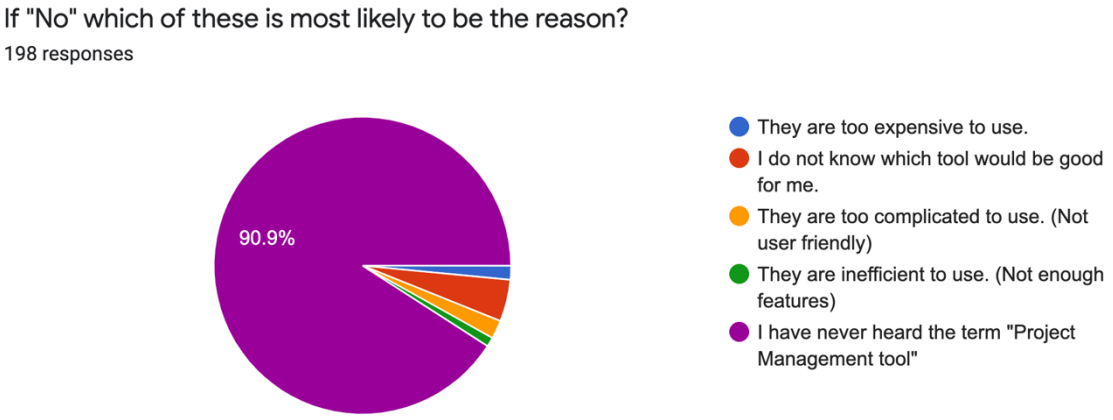

Figure 6.0 reasons for not using project management tools

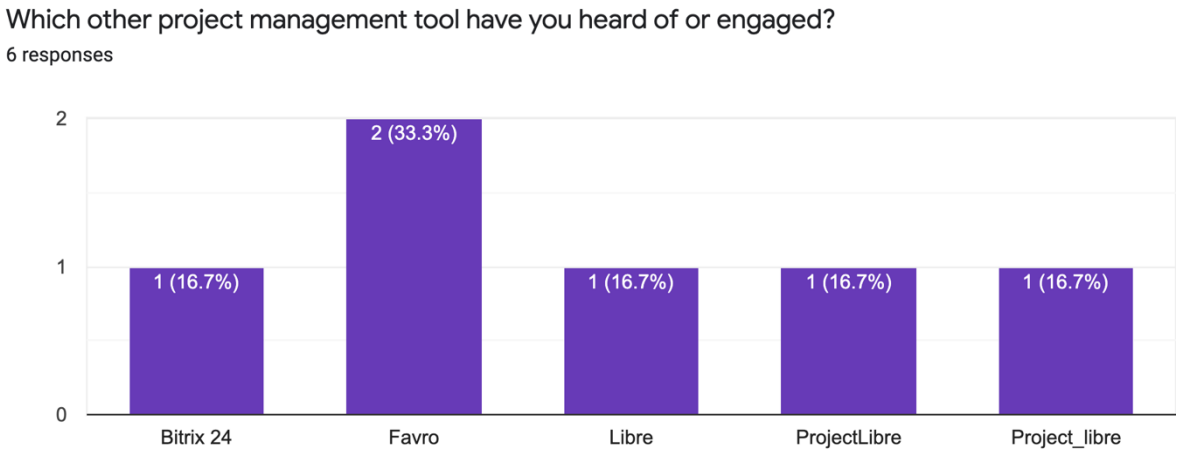

Figure 6.0 other project management tools students have heard of.

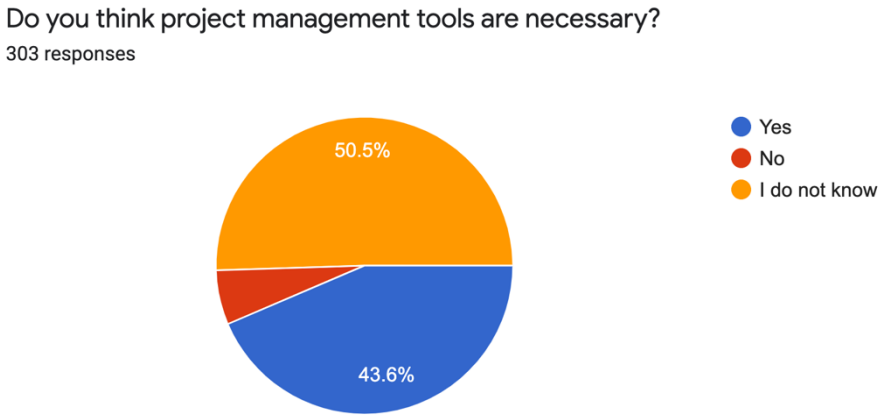

Figure 7.0 opinions on the necessity of project management tools

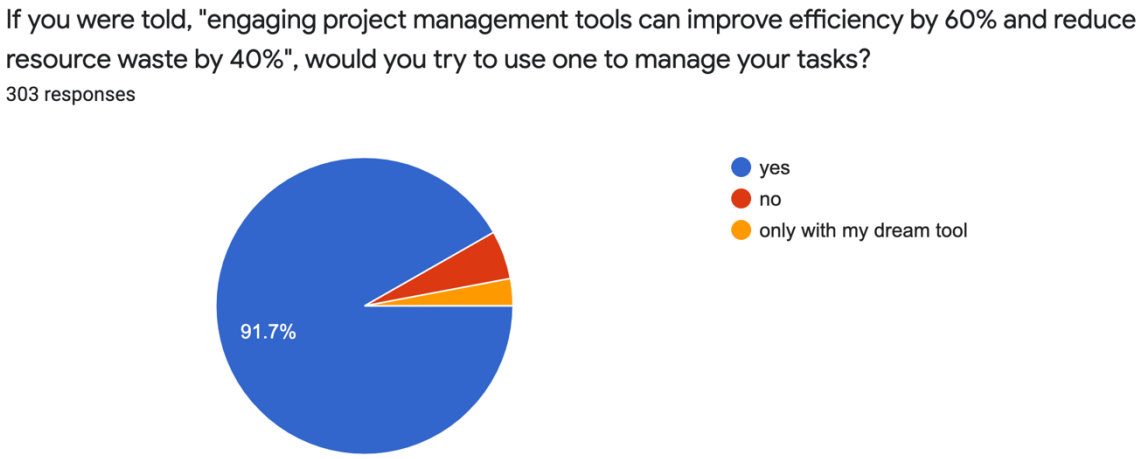

Figure 8.0 willingness to engage a project management tool upon being enlightened.

Appendix B: Comparison of project management tools

Asana Features

2-Factor Authentication	Accounts Payable	Accounts Receivable
API	Batch Permissions & Access	Budgeting
Calendar Management	Chat	Contact Management
Contact Sharing	Customer Management	Dashboard
Data Export	Data Import	Data Visualization
Document Comparison	Email Integration	Expense Tracking
External Integrations	File Sharing	File Transfer
Forecasting	Gantt Charts	General Account Ledger
Google Apps Integration	History/Version Control	Inventory Tracking
Lead Management	Lead Scoring	Marketing Automation
Multi-User	Notifications	Password & Access Management
Payroll	Project Management	Scheduling
Supplier Management	Task Scheduling/Tracking	Tax Management
Third-Party Plugins/Add-Ons	Travel Management	Resource Management

Figure 9.0 comparative features for Asana PMT

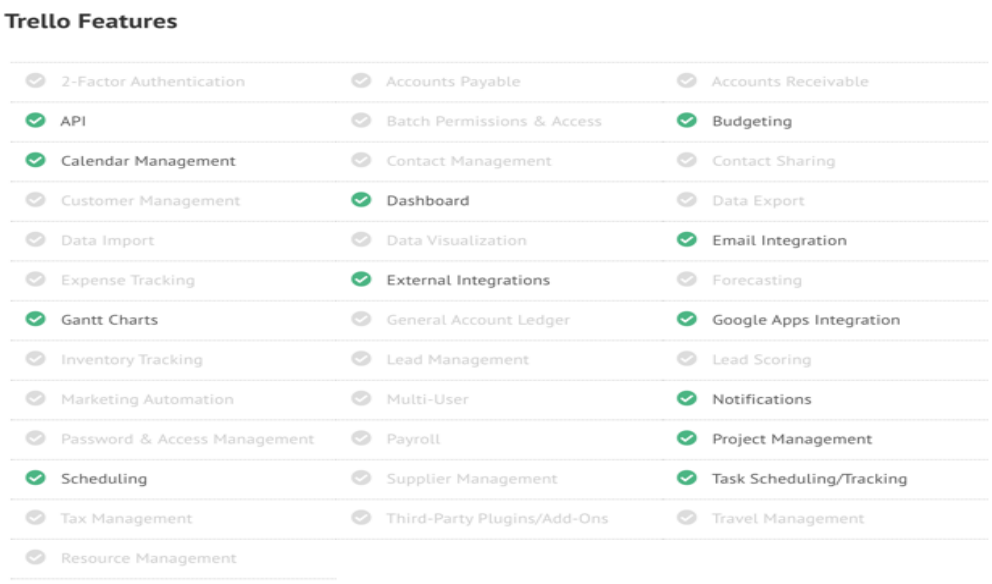

Figure 10.0 comparative features for Trello PMT

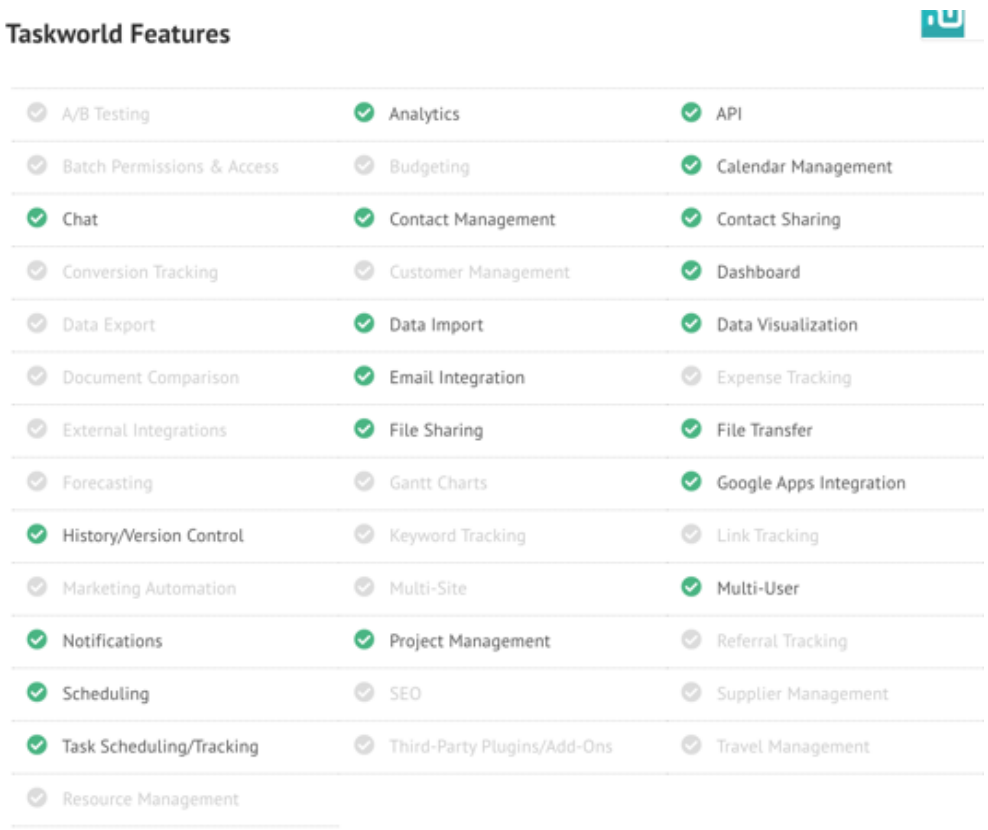

Figure 11.0 comparative features for Taskworld PMT

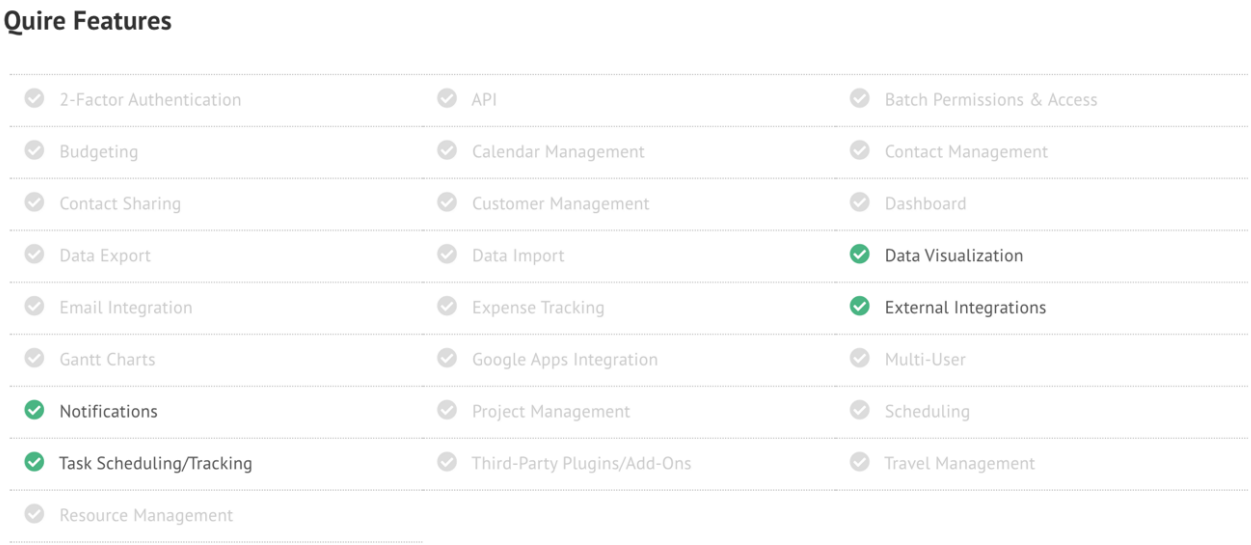

Figure 11.0 Comparative features for Quire PMT