Analysis of MetaMed Web Application to Determine Strategies

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Abstract

Healthcare is an essential service to everyone and as such, it is important that the policies and systems which are implemented in this area be adequate and flexible. Several issues have been raised concerning the capability of modern healthcare information systems in terms of the privacy, security, and availability of the data which it holds. MetaMed is a web application which seeks to remedy the problems of modern healthcare information systems through the provision of a different backend implementing by using blockchain technology. The objective of this paper was to analyze MetaMed using multiple analytical tools and methodologies to develop potential improvements for the product. A survey is deployed for such purposes. It consists of questions from varying perspectives which are constructed using the six thinking hats methodology. Once the survey results are ready, a SWOT analysis which analyzed the product's internal and external factors was conducted. Finally, a TOWS matrix analysis referenced the findings of the SWOT analysis to develop strategies to capitalize on the product's advantages and mitigate its weaknesses. Conclusively, results were produced through these analytical tools and methods supplying potential improvements on the product's features, interface, functionalities, and deployment.

Keywords
Healthcare, Blockchain, Six Thinking Hats, SWOT Analysis, TOWS Matrix Analysis

1. Introduction
Healthcare is essential in prolonging human life and enabling individuals to achieve their tasks and goals. Normally, people visit healthcare facilities to check their health or undergo certain operations. During such visits, medical data is gathered and collectively, through the millions who are serviced by healthcare, a large volume of medical data is stored and analyzed. This health-related information is either collected with regular patient care (e.g., inpatient and outpatient care) or through a clinical trial program (Cheprasov 2017). Medical data is an important resource for healthcare organizations, especially for the purposes of medical research. Developments in the healthcare sector are driven by medical research and as such requires medical data for its input. Conclusively, by obtaining an abundance of medical data, more developments could be made possible for healthcare systems (e.g., safer operations, new medicine/devices, personalized treatment, etc.) (NEJM Catalyst 2018).

Hospitals are responsible for many critical health scenarios, which is why it requires adequate medical systems accompanied by the assistance of trained healthcare professionals such as nurses and doctors with capable facilities and equipment. For the purposes of delivering healthcare services, medical records are provided for patients, doctors, and nurses. These records are essential for it holds information about past and present afflictions which determines the complications of a patient's health. Additionally, it serves as a proof of evaluation for previous operations conducted by the medical staff (Gree 2021). According to a healthcare personnel at Makati Medical Center, healthcare professionals request for certain portions of a patient's EHR to assist them in diagnosing patients, particularly if they were transferred from another hospital. The process in requesting for such mainly consists of communicating with the other hospital through online platforms which either has a long process or consume a substantial amount of time.

According to the Republic Act 10173, also known as the Data Privacy Act of 2012, healthcare professionals cannot freely share patient information except when required by the law or if a filed and approved request is present (Truică et. al. 2021). This restriction limits the effective use of EHR in the healthcare sector. Electronic Health Records (EHR) is the collection of medical records of a given patient. It assists in improving the performance of clinical outcomes and theoretically, should reduce the delay in treating patients. Despite its potential, issues in systems which handles EHRs are still present. These issues include, but are not limited to, security risks such as unauthorized access from malicious parties, system failure, and inauthentic information. To oppose these issues, blockchain technology could be used in the EHR system's backend implementation, effectively enhancing the privacy, security, and decentralization of the entire system (Shahnaz et. al. 2019).

MetaMed seeks to provide a solution for the problems or restrictions of modern healthcare information systems. Traditional storage systems were utilized in healthcare for a long period of time however, with the huge increase in volume of medical data, its capabilities in terms of data management are questioned. These storage systems were consistently questioned for security, privacy, and availability for issues were observable but were not made transparent (Dimitrov 2019). Blockchain differentiates itself from traditional storage systems by excelling in managing access, high service uptime, and handling transactions independently. It also allows for the potential of shared medical record access and is more robust as the system could not fail from a single point. Effectively, blockchain functions as a convenient and reliable technology. Thus, the potential of blockchain technology in replacing traditional storage systems exhibits viability (Arcenegui 2021). Despite similar issues in scalability issues, blockchain technology could simply utilize a traditional storage system as an off-chain storage as a deterrent to such issues (Zhang 2017). Although the benefits provided by blockchain technology to healthcare information systems is not limited to data management, its main purpose does serve such purpose.
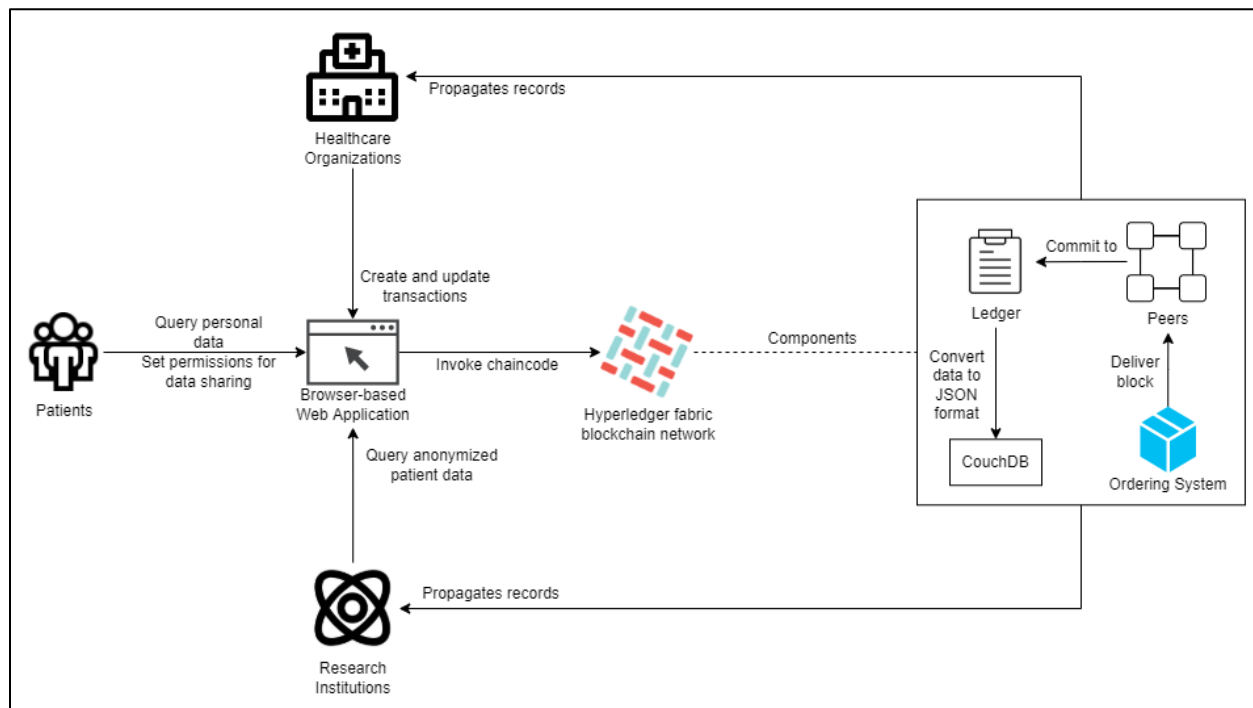

Figure 1. MetaMed System Architecture

The figure above illustrates the conceptual design of a healthcare system with the application of a blockchain network for its backend implementation. Fundamentally and through the experience of its users, the system functions similarly to modern healthcare information systems, especially of those which handles electronic health records (EHRs). The blockchain network which facilitates most of the data processing in the system works almost autonomously, only requiring human intervention or modification for very specific operations or consequences. Through the utilization of the Hyperledger Fabric, a blockchain framework which is designed to create and manage a permissioned blockchain

network, the propagation of health records is seamlessly performed without compromises in privacy, ensuring that only authorized organizations and personnel are permitted to view the information.

With the assurance of authenticity and security of medical data that is present in the system, the quality of data improves, inadvertently transforming this data into an asset which could serve the purposes of fueling the developments on research in the healthcare sector. Although the provision of such data is for the purposes of progress and development, procurement must still be considered as data is an asset. The credit for the purchase of this asset inevitably belongs to its owner which, in the realization to the benefits of digital medicine, are the individuals, particularly the patients, themselves (Kish and Topol 2015). By providing benefits to patients through the procurement of their medical data, MetaMed creates an economy where the healthcare sector and its beneficiaries constantly gain. Thus, the primary market of the product is evidently the patients who are interested in monetizing their data. For its secondary market, it targets research institutions which focuses on developments in the medical field because they would be requiring inputs from authentic medical data. By differentiating itself in the market of existing EHR systems with the application of blockchain for its backend application, MetaMed stands as a unique product which could revolutionize the economical structure of the healthcare sector.

In the premise of further understanding the product and to capitalize over its value through various aspects, this paper seeks to analyze MetaMed using various methods and tools. These are not centered to the development of the product instead; it serves to criticize and heavily evaluate the product with consideration to all its features and potential impact which it may deliver.

1.1 Objectives
With the growing influence of blockchain in the healthcare sector and data becoming increasingly valuable in all career fields, the demand for adequate healthcare information systems increases, MetaMed seeks to answer to this demand. As such, the product could be further improved through analysis which is why the following are the specific objectives of the study: (1) construct a survey using the 6 Thinking Hats methodology thereby effectively collecting questions from varying perspectives with regards to the product, (2) apply SWOT analysis which is based on the results from the 6 Thinking Hats survey to determine the strengths, weaknesses, opportunities, and threats of the product, and (3) form a TOWS analysis matrix by referencing the preceding SWOT analysis to capitalize on the product's opportunities and mitigate threats.

2. Literature review
There have been several changes on the quality of software in the healthcare sector. Other improvements were also made regarding safety for patients and staff and sterilization to prevent contamination. Considering how critical healthcare is, it is inevitable that decisions in healthcare facilities, institutes, and organizations undergo thorough analysis and discussion. The 6 thinking hats methodology provides a procedure which supports such analysis. The 6 thinking hats methodology fundamentally raises questions about its subject matter from different perspectives, creating an avenue for more comprehensive and holistic solutions (Maruyama et. al. 2016).

The six thinking hats methodology could also be applied for scenarios other than the selection of policies and technologies to be implemented. It is particularly useful for medical resident debriefings. With the application of the six thinking hats methodology, simulations could be conducted involving different individuals wearing different hats. By doing such, it allows each individual to focus on the scope indicated by their assigned hat during which the ideas they generate are more congruent to its respective approach (Zhang et. al. 2018). However, despite the utility that the six thinking hats methodology provides, expert debriefers and professionals remain to be substantial in such debriefings.

To maintain the quality of products, operations, and systems, certain metrics must be met. Although the different perspectives from the six thinking hats methodology could compromise these metrics, potential solutions are conceptualized through the cumulation of ideas from varying perspectives which may possibly lead to a better and sustainable solutions or improvements to these metrics (Plack et. al. 2019). By using the six thinking hats methodology alongside other analytical tools such as analysis diagrams, models, collaborative problem solving, and drifting goals, better simulated case scenarios could be produced. Paper articles, however, apply differently for they do not determine if knowledge, skills, and attitudes for such assessments are adequate.

With the increase in demand for healthcare systems, further improvements for healthcare systems are sought after. An analysis model which assists in improving healthcare systems is the SWOT analysis model. By using SWOT analysis, various considerations concerning the currently implemented medical equipment and healthcare technology are constructed. Often do SWOT analysis reveal that the strengths of healthcare technology are generally in its implementation of hierarchal control structures in different levels of service delivery and information dissemination. Its weaknesses are often found in the lack of resource management. Opportunities are very particular to the different specializations offered in the healthcare field. For its threats, political elements are specifically mentioned (Al-Mawali 2018).

3. Methods

To gather data for the study, a survey was developed using the six thinking hats methodology. The six thinking hats methodology help formulate the appropriate questions through different focuses for a certain subject. Its usage allows for product and process improvement; critical and analytical thinking, problem solving, and creativity training (Serrat 2017). A set of questions was devised to assess the product through the several perspectives of its primary target, which are patients, who could potentially be anyone above the legal age of 18. Several questions were generated per hat and are then filtered to determine which questions would yield substantial responses accordingly to the product's purpose. Although blockchain is one of the product's primary features to differentiate itself in the market, it is inconsequential to the profitability and understanding of the product therefore, none of the questions in the survey pertain to its nature or specifications. Accompanying the survey is a document which is provided for respondents to read before answering the former. As questions were filtered to only include substantial questions, at least 3 questions per "hat" were present in the survey. The filtering is necessary for it avoids redundant or tightly coupled questions from being included in the questionnaire. Inadvertently, this allows respondents to construct their insights regarding the product without consuming a considerable amount of their time. The survey would be distributed by creating and sharing it using Google Forms. Most of the questions are either binary type questions, as they are answerable by two limited options (e.g., "Yes" or "No"), or open-ended question types, for questions which require detailed feedback. All the insights from the different respondents would be beneficial to the product and would all be considered as its possible improvements.

The SWOT analysis method is used to evaluate the product after data is gathered from the survey. This analysis method essentially analyzes the internal and external advantages and disadvantages of a product under the context of business (GURL 2017). None of the data gathered from the varying sections of the survey would be limited to a single aspect of SWOT instead, they are holistically viewed to every aspect whether it be strength, weakness, opportunity, or threat. Once the SWOT analysis is established, it is followed by the application of a TOWS matrix, a situational analysis tool for strategic formulations (Dandage 2019). TOWS would be used to couple the strengths and weaknesses to the opportunities and threats taken from the SWOT analysis to formulate strategies for the product in terms of capitalizing on its opportunities and mitigating its threats.

4. Data Collection

A survey for the product is created and shared using Google Forms. Its population for its target respondents is virtually anyone. This is because the product's primary target are patients, an individual who was provided healthcare services, and as all have the right to health, every individual is targeted by the product. The sampling technique utilized is simple random sampling, taking random respondents from the general populace to avoid bias.

The survey was propagated through various social networking platforms such as Facebook, Twitter, and Discord. A total of 50 respondents have completed the survey on April 7, 2022. Further respondents could have been taken however, to avoid new data from being introduced during analysis, responses on the questionnaire were halted.

5. Results and Discussion

The results for this paper are primarily sourced from the survey results although, further analysis yields both the SWOT analysis and the TOWS matrix. The SWOT analysis extracts the implications and conclusive statements in the survey results and the TOWS matrix formulates strategies by binding the strengths and weaknesses to the opportunities and threats from the SWOT analysis.

5.1 Survey Results

The questions in the survey are divided to different sections to represent each hat in the six thinking hats methodology. These questions are attributed accordingly to the focus or intent of the hat they represent. Several questions in the survey are open-ended questions thus, the answers for such questions are generalized into certain themes to quantify to label and quantify such inputs (Table 1-6). The most frequent answer for each question is highlighted (bold).

Table 1. Six Thinking Hats (Blue) Questions

Question	Answers	
1. Do you have experience in using or usually use applications concerning your data?	**Yes (86%)**	No (14%)
2. As a patient, do you believe it is important that you are informed whenever your data is viewed or utilized by healthcare professionals?	**Yes (96%)**	No (4%)
3. As a data owner, do you think that you should be given the opportunity to monetize your data by having it used for legal purposes in exchange for financial benefits?	**Yes (90%)**	No (10%)

Table 2. Six Thinking Hats (White) Questions

Question	Answers						
4. Do you think that patients should be given more benefits as their data is substantial to fueling medical advancements?	Strongly disagree (2%)	Disagree (0%)	Slightly disagree (2%)	Neutral (12%)	Slightly agree (12%)	**Agree (36%)**	**Strongly agree (36%)**
5. Do you think that global access to patient data which requires patient confirmation contribute to the provision of adequate treatments to patients?	**Yes (90%)**				No (10%)		
6. Would you be more inclined to frequently visit your healthcare provider if you stand to benefit not only in terms of your health but also of your finances?	**Yes (92%)**				No (8%)		

Table 3. Six Thinking Hats (Yellow) Questions

Question	Answers	
7. Do you think that worldwide interoperability and monetization of patient data will revolutionize the financial infrastructure of the healthcare sector?	**Yes (86%)**	No (14%)
8. Do you think that the profit gained from the monetization of patient	**Yes (76%)**	No (24%)

data would ultimately reduce healthcare cost for the general populace thereby making healthcare more accessible for anyone?							
9. How secure are the access confirmations featured by the product in terms of restricting unauthorized access to your data?	Very insecure (2%)	Insecure (2%)	Slightly insecure (10%)	**Neutral (46%)**	Slightly secure (16%)	Secure (12%)	Very Secure (12%)

Table 4. Six Thinking Hats (Red) Questions

Question	Answers				
10. Do you feel frustrated about the limited capabilities of modern healthcare systems that appear more detrimental than beneficial to patients?	**Yes (94%)**		No (6%)		
11. How do you feel about benefitting directly from selling your own data, in the context that you may arbitrarily decide between providing and restricting access to your data at any time?	Terrible (8%)	Skeptical (4%)	Neutral (26%)	Curious (6%)	**Supportive (56%)**
12. Did you feel accepting or receptive, in any way at all, when this product was presented to you?	**Yes (72%)**		No (28%)		

Table 5. Six Thinking Hats (Black) Questions

Question	Answers						
13. How complicated is the interface of the product?	Very simple (12%)	Simple (12%)	Slightly simple (24%)	**Neutral (36%)**	Slightly complicated (12%)	Complicated (2%)	Very Complicated (2%)
14. In your opinion, is the cost of your privacy too expensive relative to the financial benefits that you may receive from monetizing your data?	**Yes (66%)**			No (34%)			
15. Do you have legal concerns regarding the product's implemented	**Yes (62%)**			No (38%)			

business model in terms of profitability?							
16. Rate the stability of your internet?	Very unstable (0%)	Unstable (6%)	Slightly unstable (8%)	Neutral (20%)	**Slightly stable (28%)**	Stable (16%)	Very stable (22%)
17. Do you prefer a dedicated mobile application over a web application?	**Yes (72%)**			No (28%)			

Table 6. Six Thinking Hats (Green) Questions

Question	Answers						
18. What are your comments or suggestions with any of the product's features to improve them?	**None (50%)**	Show interactive product (4%)	More security (8%)	Familiar interface (8%)	Illegal concerns (2%)	More data control (8%)	UI improvements (20%)
19. Do you think the empowerment of patient data ownership improves the trustworthiness of healthcare information systems?	**Yes (88%)**			No (12%)			
20. What changes would you like to see regarding the product's interfaces?	**None (70%)**	More visuals (6%)		More transparency (10%)	More functions (10%)		Add user guide (4%)
21. Would you like more features and systems to be integrated into the system?	**Yes (90%)**			No (10%)			

5.2 SWOT Analysis

The SWOT analysis uses the data from the survey results as input to determine the strengths, weaknesses, opportunities, and threats to the product, MetaMed. As per the design of SWOT analysis, the strengths and weaknesses are the advantageous and disadvantageous internal factors while the opportunities and threats are the advantageous and disadvantageous external factors to the product.

The strengths of MetaMed mainly highlights its simple, effective interface and its features for enabling the monetization of patient data through its blockchain implementation. Most of the respondents indicated that they have experience over using an application which provides them control of their data and as such enabled them to mention such strengths of the product. There were also a small number of feedbacks on its assistance in providing adequate healthcare. For the weaknesses of MetaMed, features concerning the security of data in the system are commonly mentioned. Particularly, numerous statements address the lack of tracking of access history for the data the system hosts. In terms of design and language, personalization and localization were mentioned to be lacking. These pertains to the common theme personalization which modern applications currently have and the different language options that they support. MetaMed's opportunities are rooted in the demand for more healthcare benefits and the redirection of benefits to data owners. The respondents were firm in establishing that it had been known that corporations were already selling their data without their notice thus, it is only proper that they regain control over their data and receive the benefits for the value it yields. Lastly, MetaMed's threats are generally bound to inconsistency that the product's

business model exhibits and the skepticism which people innately have in sharing their data or partly losing their privacy (Table 7 and table 8).

Table 7. SWOT Table

Strengths	Weaknesses
• Allows patients to gain benefits from monetizing their data. • Provides a simple but effective interface. • Provides features which allow for global patient data access with certain checkpoints for security measures. • People feel comfortable with the option to restrict access to their data at any time. • Majority of the target respondents agree to the benefits of personal data to the future of medical technology. • Functionalities such as Cybersecurity helps reduce the ease of worries on Confidentiality. • Patient Empowerment and Benefits. • Accurate diagnosis of patients and prioritized healthcare. • Blockchain integrated system is more favored than the traditional healthcare systems. • The product supports big data management.	• Features regarding the restriction of access to data are lacking. • Lack of tracking on historical data. • People prefer a dedicated mobile application over a web application. • Data encryption needs to be improved to avoid risks of potential threats to the system. • Lack of Integration of KYC. • Efficacy and Significance of Data needs to be assessed to make the product "Profitable" • Color palette decisions of the application needs improvement to make it "eye-catching" for anyone accessing the product. • Confidentiality is a big factor that needs to be elaborated further. • Lacking in localization.
Opportunities	**Threats**
• People strongly believe that they should be informed before their data is viewed or utilized. • People are supportive in monetizing their medical data. • People demand for more benefits as their data is essential for developments in medical advancements. • Reluctancy in visiting hospitals because of costly medical fees. • People love the idea of anonymity as it decreases the risk of Identity theft and breach of data. • People emphasizes the idea of the product may lead not only to medical but to scientific contributions as well. • Data is integral to evaluate services and improvement of medical care. • People are open to the idea of selling data for the purpose of enhancing healthcare in a hospital.	• People are generally cautious in sharing their data when they receive benefits in return. • Concerns on inconsistent profitability of the product. • The concept of selling personal data may raise suspicions and distrust with the product. • Incentives should be much more besides from the medical and long-term monetization.

5.3 TOWS Analysis

Once the SWOT analysis is established, a TOWS matrix analysis references it to develop strategies for the improvement of the product, MetaMed. The TOWS matrix analysis would provide strategies to mitigate the threats to the product and address its weaknesses. Additionally, it also develops methods to enhance the strengths and opportunities of the product. The table below presents the TOWS table which contains SO strategies, constructed by combining strengths and opportunities, WO strategies, constructed by combining weaknesses and opportunities, ST

strategies, constructed by combining strengths and threats, and finally, WT strategies, constructed by combining weaknesses and threats.

The SO strategies which were developed in this TOWS Matrix primarily focus on the financial benefits and security of the users. It introduces certain features such as a live access feed, an access history, and pop-ups to boost user engagement. By referencing the survey results, it was noticeable that users were consistently skeptical on the purposes of the application. To remedy this, constant reminders of the product's purpose and current activities will be provided. For the WO strategies, there are several changes to be implemented on the user interface. Different language options will be made available to users to reduce problems in readability. Similar to the SO strategies, the implementation of a live access feed at the homepage and an access history function is determined to be a viable strategy to mitigate the product's weaknesses with the leverage of its opportunities. A separate video production would also be made which explains the process which the product performs to monetize patient data will also be made available for users who are skeptical of such a feature. Additionally, to capitalize on the interest of users in monetizing their data, several advertising agencies will be commissioned to promote the product across different parts of the world with different languages. ST Strategies for MetaMed involves transparency with all involved research institutions and a scheduled sharing period to improve user benefits. By providing users with the capability to view which organizations could view their data, they may be reassured by witnessing that they are all verified research institutions. Additionally, to stabilize the consistency of profit and data in the system, a scheduled data sharing feature will be provided where users agree to guarantee that their data is shared for a set amount of time. Lastly, for WT strategies, strategies that focus on discretion and verification are constructed. Users will be restricted from data sharing unless they provide proper identification through the provision of a valid ID. Contracts will also be reaffirmed to further secure the system and the data of its beneficiaries.

Table 8. TOWS Matrix

	Strengths	Weaknesses
	S1: Allows patients to gain benefits from monetizing their data.	W1: Features regarding the restriction of access to data are lacking.
	S2: Provides a simple but effective interface.	W2: Lack of tracking on historical data.
	S3: Provides features which allow for global patient data access with certain checkpoints for security measures.	W3: People prefer a dedicated mobile application over a web application.
	S4: People feel comfortable with the option to restrict access to their data at any time.	W4: Data encryption needs to be improved to avoid risks of potential threats to the system.
	S5: Majority of the target respondents agree to the benefits of personal data to the future of medical technology.	W5: Lack of Integration of KYC.
	S6: Functionalities such as Cybersecurity helps reduce the ease of worries on Confidentiality.	W6: Efficacy and Significance of Data needs to be assessed to make the product "Profitable"
	S7: Patient Empowerment and Benefits.	W7: Color palette decisions of the application needs improvement to make it "eye-catching" for anyone accessing the product.
	S8: Accurate diagnosis of patients and prioritized healthcare.	W8: Confidentiality is a big factor that needs to be elaborated further.
		W9: Lacking in localization.

	S9: Blockchain integrated system is more favored than the traditional healthcare systems. S10: The product supports big data management.	
Opportunities O1: People strongly believe that they should be informed before their data is viewed or utilized. O2: People are supportive in monetizing their medical data. O3: People demand for more benefits as their data is essential for developments in medical advancements. O4: Reluctancy in visiting hospitals because of costly medical fees. O5: People love the idea of anonymity as it decreases the risk of Identity theft and breach of data. 06: People emphasizes the idea of the product may lead not only to medical but to scientific contributions as well. 07: Data is integral to evaluate services and	**SO Strategies** S1O2O4: Increase emphasis on the financial benefits that could be made possible if they monetize their data through visuals and a FAQ page. S2S3O1: Adding more visible user prompts when data is being accessed to bring awareness to the security features through the interface. S3S4O5O6: Provide users with a live feed and an access history feature which allows them to monitor healthcare professionals who have accessed or currently accessing their data. S8O4O8: Provide visuals or pop-ups which occasionally reminds users that their data is being made accessible to legitimate research institutions so they could produce developments in healthcare, effectively reassuring concerns on security.	**WO Strategies** W1O1: Add several interface designs to exhibit the perspective of healthcare personnel when they are attempting to access the records of a certain patient. W2O1: Provide additional pages where the user could view those who have accessed their records previously. Additionally, a live feed of personnel who are currently accessing the user's data will be made available in the homepage. W9O7: Produce several language options for different people to assist in readability. W8O2O8: Create a video which details the process that the product undergoes to monetize patient data. This will be kept on a video streaming platform such as YouTube to avoid overloading the interface. A link will be made available in the product. W9O8: Commission different advertising agencies to produce localized advertisements for the product's features and value.

improvement of medical care. O8: People are open to the idea of selling data for the purpose of enhancing healthcare in a hospital.		
Threats T1: People are generally cautious in sharing their data when they receive benefits in return. T2: Concerns on inconsistent profitability of the product. T3: The concept of selling personal data may raise suspicions and distrust with the product. T4: Incentives should be much more besides from the medical and long-term monetization.	**ST Strategies** S3S6T1T3: Improving the integrity of the product by having a feature wherein users can see the list of research institutes which have access to their anonymized data. S7S8T4: Strengthening the incentives and long-term benefits are not the only primary factors to consider. Consistency should be applied. The rewards and benefits should always stay the same for the following years to help maintain that "consistency". Special Incentives are added for those who will be using the product and be marked as a Loyal Customer. Giving people a reason to stay. While providing the same quality of medical care for their patients in the long run. S1T2: Implement a scheduled sharing period where users share their data for a set amount of time, but they are rid of the ability to restrict access to their data until the set time is reached. In return, they are provided slightly more benefits than the normal user. This allows for consistency in the data pool which is the leverage of the product in its profitability.	**WT Strategies** W5T2: Implement a feature which restricts users from sharing their data until they provide proper verification for their identities. Only one account is permitted for each verified user. This reduces the possibility of abuse in the system as duplicate accounts or fake accounts cannot be utilized to produce patient data of a nonexistent person. W5T2: To help appeal to the people. Apply marketing through digital media to expand upon the exposure of making the product stand out and recognized. Expanding the market to advertisements and digital media would help generate profits and knowing what the customer needs with the product. W8T3: It is with utmost discretion that the contract agreement will be strictly followed. Not as an option but as mandated by the purpose of confidentiality and following proper digital laws. If the company were to break the promise of protecting personal data. Then the customer may choose to file charges as long as evidence show proof of breaking contract.

6. Conclusion

The objectives of this paper were to analyze the product, MetaMed, to bring forward potential improvements. A survey was constructed using the six thinking hats and was distributed to respondents accordingly to the product's target users. The survey consisted of 21 questions in total from 6 varying perspectives which were aimed to evaluate the product. After a few weeks, the survey gathered 50 responses overall. The results taken from the responses of this survey were used for the SWOT analysis which followed. The SWOT analysis evaluated the various factors concerning the product such as the strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are internal factors while opportunities and threats are external factors to the product. Afterwards, the resulting set of factors from the SWOT analysis are referenced by the TOWS analysis matrix to develop strategies in emphasizing the

strengths and opportunities to the product while simultaneously providing solutions or mitigating its weaknesses and threats. Conclusively, these analytical tools and methodologies collectively contributed to provide potential improvements and strategies for the development and deployment of the product, MetaMed.

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