Subject Name: Requirements Management - N

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I. Introduction

TOG is a company that makes glassware and is on the strong growth momentum. TOG Company has partnered with e-commerce sites to sell online. Currently, strong purchasing demand from TOG's customers is soaring, that the e-commerce sites fail to meet the demand for TOG to track and manage customer purchase records. Therefore, TOG needs to develop its commercial website so that TOG can expand its business and solve problems encountered when using an e-commerce site. To develop a commercial website for TOG, TOG must cooperate with developers to exchange and develop the project.

Agility Software Development Company is a company with a strong and experienced development team that TOG Company should choose as a development partner. They are a team with experience developing under the Scrum / Agile software development model. In the team, Jon has worked with Agile application projects and is a team leader, so he knows how to lead members to develop the project. In addition, the team also has Willow, who is a good programmer and has good communication skills. These elements of Willow will help analyze the requirements from TOG most clearly and realistically. The remaining members are Jon, Thomas, and Ravi, who are known to be programmers with good Web development knowledge. All are ready for project development.

To develop a website for TOG, both sides must agree on a software development method to plan the project. According to Synopsys Editorial Team, four popular software development methods are Agile, DevOps, Waterfall, Rapid (Synopsys Editorial Team, 2017). Each method has its strengths and weaknesses. To choose a proper development model, both parties must rely on the development team's ability to apply the development method and elements of the development project (time, complexity, etc.).

The waterfall model is a method of project management based on a sequential and sequential design process. The waterfall pattern is run in strict order and without any back and forth; the term was first introduced in an article published in 1970 by Dr. Winston W. Royce and is used in industrial design applications (Lewis, 2019). Waterfall model working steps are Requirement Gathering and analysis, System Design, Implementation, Testing, Deployment of system, Maintenance. The strong points of the waterfall model are: simple and easy to apply, Suitable for simple or small projects, etc. In addition, this model still has some weaknesses such as: Does not

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allow changing the project's requirements, not easy to handle risks, No product to work until the project is almost completed, etc.

Scum / Agile is a development model that operates in an iterative and continuous process. It is this repetition that helps the model adapt to changes in customer requirements and achieve high-quality products. (ReQtest, 2018). Agile divides the work into small projects and completes it in a given time (sprints last 2-4 weeks), and works repetitively in a sequence. Each iteration has the following sequence of steps: Planning, Requirements Analysis, Design, Coding, Unit Testing, and Acceptance Testing. Scrum / agile has some strengths such as ease of risk management, achieving customer satisfaction with products, etc. In addition, there are some weaknesses, such as Members must have experience with Scrum / Agile to do it, depending a lot on customer interaction (customer reviews with the product can affect the final result), etc.

II. Section A – Management Summary

Assumption:

∙ Due to the increasing number of customers who order more and more and the tracking and management of purchase records facing many difficulties, a new system needs to be built and completed quickly to solve problems.

∙ Agility Con Concept has a strong development team with some knowledgeable members and has applied scrum / agile to develop projects rapidly and meet TOG's needs. ∙ TOG Company has a high demand for the quality of the website.

At the company's request, the agile and scrum model is the most suitable sub-model for website development projects for the TOG company. The scrum model is the most commonly used today and has an efficient workflow. Applying scrum eliminates complicated steps and focuses only on the steps necessary to meet the customer's needs.

According to Pavel Kukhnavets, the benefit of scrum/agile is that it is easy to manage and good risk management (Kukhnavets, 2016). Because the scrum model works in a way that breaks down the work, meetings are always held and are regularly communicated with the client as it identifies problems and solves them. Before starting the project, TOG requirements will be analyzed and prioritized for functional requirements. This will make it possible for the developer to estimate the workload and plan for a reasonable execution. After evaluating the requirements, the team will

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develop and divide the time to build the functionality into each sprint (each sprint 2-4 weeks) depending on the project. The sprints will be worked in sequence and repeated until the project requirements are fulfilled. During each sprint, there will be small meetings to grasp project progress and to manage potential risks. By holding meetings regularly, the development team can easily grasp project changes and spot risks quickly. Risk issues will be discussed and addressed in meetings. As a result, projects applying scrum / agile always have good work progress and complete quickly.

In addition, the application of the scrum / agile model will help TOG have a most satisfying website. Every time a sprint is completed for the scrum model, the developer will give TOG parties reviews and comments on the product. Both the TOG and their customers are involved in the evaluation of the project's functions. They will accompany the development team throughout the project. Thanks to this characteristic of scrum/agile, the products are always being improved, and the customer is satisfied with the product.

TOG company has some experience and has worked with the scrum / agile model and is in a high position (Marketing Director and Chief Operating Officer), which will make the project more convenient for connecting and exchanging information between the two companies. The fact that TOG company has a scrum savvy person will make developers' development more convenient to connect and understand problems in customer requests. Besides, it is also possible to track the progress of the project and have plans.

The scrum/agile method is a rather complex model compared to other methods like the waterfall model, etc. This requires members to be trained to grasp the method. Agility Con Concept is a strong development team with experienced and key players in the scrum / agile application. Among them, Jon has worked on several Agile development projects as a Team Leader and has a strong understanding of Web site development. Due to his position as the leader of an agile development project, he is very knowledgeable about scrum. He can take on the role of Scrum Master in the development team and guide the team members in the right direction. In addition, the team also has Willow, who is known as a very good programmer, has a wide understanding of Web site development, and has good communication skills. She can do a good job of the Product Owner role in the team. Thanks to good communication, she can accurately identify customer problems

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and easily exchange product information in the working process. In addition, the professional knowledge of the members is assessed very well.

Besides, there are some potential risks when applying scrum. In the human resources team of a web development company, member Ravi as a web developer is known to have debates against customers. This will make it difficult to implement the scrum model to communicate with the customer if the member has a negative expression of receiving the customer's opinion. In turn, the quality of the product will be affected. Thomas is a tester, and he can only be involved in the project three days a week. This can affect the progress of the project. Each sprint can be fast or slow depending on the difficulty, so the tester must always be ready at any time to help the programmer fix the error. The lack of a tester available will delay the completion of each sprint, affecting project progress.

III. Section B – High-level requirement analysis and MosCoW prioritization

1. Functional and non-functional requirement

| ID | Type | The reason why I decided it belongs to the functional or non-functional requirement |
| --- | --- | --- |
| 1. | Functional | A website for sale, the customer, can register, and login is indispensable. This is a function that helps to confirm the identity of the buyer to contact, and besides, they will be responsible for the orders of the company. Customer information verification is one of the business operations of TOG Company. |
| 2. | Functional | For online sales web, finding and viewing product information is indispensable. The function for customers to see products is one of the company's business activities to help viewers choose products like that. |
| 3. | Non-Functional | The website must meet the criteria of the interface. Beautiful design is a non functional requirement because it is related to what the system has to meet. |
| 4. | Functional | In business, communication with customers is indispensable. The system will have to help both parties interact through messages, photos, etc. This is what the system will have to do in the function. Therefore, this function is functional because it is in the business activities of the business. |

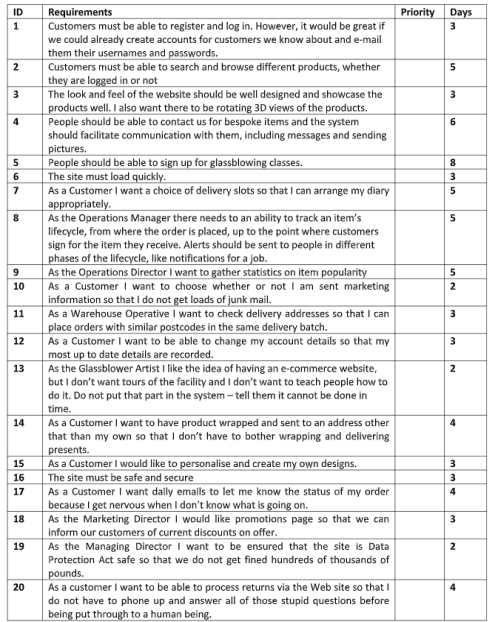
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| 5. | Functional | Since the system will have to do the job of helping the customer register for a class, besides that, the registration of the customer's class can also be one of the enterprise's business activities, so this function is functional. |
| --- | --- | --- |
| 6. | Non-Functional | Because this requirement is related to what the website needs to achieve in terms of site performance (must load fast), and it is not related to any company performance of the website. |
| 7. | Functional | Because this activity demonstrates the user's behavior, users can choose the delivery time they want to help businesses arrange delivery times reasonably and save time (avoid the time the buyer does not receive the goods). |
| 8. | Functional | Because this is a function that helps the manager manage and track their orders, this function is a data logging operation. So it's functional |
| 9. | Functional | Because this function helps the Operations Manager gather statistics on the popularity of the item, this function is related to one of the product management activities in the business. |
| 10. | Functional | This function is related to sending marketing and advertising information from the company to customers. This is a function of the business process of the business. So this is functional. |
| 11. | Functional | This function will help TOG consolidate orders with the same shipping area to save the delivery time. This is one of the system's delivery functions to optimize delivery times. So this is Functional |
| 12. | Functional | This request is related to customer behavior. The customer updating personal information on the website is the interaction between the customer and the system. So this is functional. |
| 13. | Non- Functional | This is a negative requirement for requirement 5. The glassmaker's request also clearly does not want to open the classroom. Therefore, the function is not related to business activities or anyone's behavior, so this is non-functional. |
| 14. | Functional | Because this is a function that helps the user choose a shipping location, it requires customer interaction with the system. This interactive delivery location selection is one of the small operations of the delivery function. So it's functional |

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| 15. | Functional | This requirement relates to the company's business. Users can exchange information with TOG to make their designs. |
| --- | --- | --- |
| 16. | Non- Functional | This function is related to the website's criterion, which is the website security issue. So it’s Non-functional. |
| 17. | Functional | Because this is the function that helps the user update his order information, it is one of the functions of the delivery system function. |
| 18. | Functional | This function helps the company to inform customers of promotions to attract customers. This is one of the system's behavior and in the company's business operations. So this is functional. |
| 19. | Non- Functional | This function is related to the website's criterion, which is the website security issue. So it’s Non-functional. |
| 20. | Functional | This is a function that helps customers to return goods through the website. This is one of the small functions of a delivery system (return order processing). The system will need customer interaction to perform this behavior. So this is functional. |

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2. The request is essential for the website

| ID | The reason why the requirement is essential for the website ( justify based on case study) | Notes |
| --- | --- | --- |
| 1 | Because it is a function that helps to confirm the identity of the buyer to contact and they must be responsible for the order of the company. |  |
| 2 | Because a sales website needs to have basic functions such as product search, without this function, the website will make the customer have an unpleasant experience when using the website to find and buy the right product they mean. |  |
| 4 | The exchange of information between the buyers and sellers is very important in business, so the lack of functionality on the website will affect the business and cause misunderstanding between sellers and sellers to buyers. |  |
| 7 | In an e-commerce business, it is extremely important to deliver the goods to customers at the right time. Timely delivery will help the company save time (avoid re-delivery many times due to busy customers) and help customers be satisfied with the service. So the timing of delivery function in the ordering and buying process is very important to the website. |  |
| 8 | Order management is one of the business activities of the business, so the order tracking function will be very helpful for businesses in tracking and processing orders if there are any risks. |  |
| 9 | For the sales website, the collection of statistics on the item's popularity will help the business make effective sales policies. Therefore, the function of collecting item popularity statistics is very important for a business website |  |
| 14 | During the purchase process, customers can order as gifts. To satisfy customers' need to order as gifts, customers can change the receiving address, which is necessary for the website. |  |
| 16 | For a sales website, data security is extremely important, and the website has holes or data pairing that will greatly affect the company's business. For example: Losing customer information into a competitor's hands can result in a loss of a certain number of customers. In addition, disclosing customer information will cause TOG to violate the customer's privacy and have to face the law. |  |

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| 18 | For businesses, offering promotions is a corporate business strategy. By pushing promotions on the sales, the site will help increase sales for the sales company. Therefore, it is indispensable to build a promotion page to inform its customers about the current deals. |  |
| --- | --- | --- |
| 19 | Security has always been an issue that concerns websites. Violation of the Data Protection Act provisions will expose the website and TOG company to legal problems. From there, it is causing great damage to TOG's reputation and money. Therefore, compliance with the Data Protection Act is essential for the website. |  |

3. MosCoW prioritization for requirement is essential for the website

| ID | Priority | Because |
| --- | --- | --- |
| 1 | Must | Since this is a sales website, it is imperative to log in to authenticate the buyer. Logging in will help the system to capture customer information and exchange information easily. Buyers must log in before buying something, which allows TOG to verify their identity and deliver to the correct address and, in addition, ensures that the customer takes more responsibility for each item they ordered. |
| 2 | Must | Because this is a basic function of a sales website, this function will help users to find products quickly. Besides, not having to log in and searching and viewing product information is also one of TOG's business activities. Letting customers preview the product will help them better understand the product and make decisions. This function is the same as with the product display in the store. Lack of this function will make it difficult and time-consuming to search for products. In addition, the product may not be displayed to the customer. This may affect the company's business. |
| 4 | Could | Although this is one of the jobs that does not contribute too much to TOG's revenue, it is a function interested in many glassblowers. In the coursework, it is said that this will stimulate the glassblower's creativity. This function is quite important for glassblowers. |
| 7 | Could | This is one of the small functions of the system, but also very important. The choice of when the customer receives the goods is one of the conditions that greatly affect TOG's business. Customers can choose when to receive goods, which will help TOG save time and cost when shipping (avoid delivery failure and multiple deliveries). |
| 8 | Should | This is quite an important function. This function will help the management company and the customer side to catch the order situation. On the company side, this function will help the company manage |

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|  |  | orders strictly, avoid loss, etc. For customers, customers can track order information and arrange a time to receive goods. |
| --- | --- | --- |
| 9 | Should | This is a rather important and influential function of business strategies. Collecting purchasing power data of items will help the company manage stock better (without worrying about shortages). In addition, can check for limited items and devise strategies business to stimulate customers to buy. This function is one of the factors affecting the company's revenue. Without this functionality, the website can handle issues such as stocking problems, product stocking, etc. |
| 14 | Could | For customers wishing to buy goods as gifts, customers must change the recipient's address. This function is not highly influential, but it will help customers get satisfaction when buying at the website. |
| 16 | Should | Since this is a sales website, data security is very important. Transaction information and customer information must be kept confidential at all times. A website with a poor security system will be vulnerable to hacker attacks and data exploitation for malicious purposes. |
| 18 | Could | This function will have a great influence on the company's revenue. Thanks to business strategies such as discounts, promotions, etc., the company can increase sales. Having a promotion page to inform TOG customers about promotions is a necessary function of the system. This function will help TOG to develop the way of business strategy and at the same time also attract customers to buy. |
| 19 | Should | According to the executive director, violating the laws of the data protection law will subject the company to legal action and large fines. Besides, the violation will also affect the image of the company. Therefore, the website must meet the conditions of data protection law. |

IV. Section C – Legal, Social, Ethical, and Professional Issues

Assumption:

∙ TOG Company is a thriving and influential enterprise in the glassware industry.

∙ TOG staff do not fully understand code of conduct in their respective fields.

∙ TOG's an advertising and marketing team is not well trained.

1. The LSEPI that TOG may encounter

**Situation 1: TOG's website is plagiarized, illegally using trademarks, ideas.**

TOG Company is on the rise and opened its e-commerce website to expand the market and meet the strong demand from customers. Therefore, TOG's position is increasing in the trading market,

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so the protection of trademarks and ideas is essential to not be exploited by bad guys and getting involved in legal issues affecting the image of TOG.

∙ **Legal aspects:** With many customers and strong development potential, TOG may be illegally used by a number of individuals and organizations for profit. This directly affects TOG's image in the customer and reduces its credibility in the business market. To ensure trademark protection and eliminate sites that use unauthorized TOG's images, TOG must take legal actions to protect its trademark. To obtain evidence of infringement of websites using unauthorized trademark images, TOG may refer to the Trademarks Act 1994: Part I Registered trade marks, Section Effects of registered trade mark (legislation, 1994) . Besides, TOG can cooperate with lawyers to be consulted and carry out legal action to protect trademark. TOG may refer to some legal acts in the Trademarks Act 1994: Part I: Registered trade marks, Section Infringement proceedings (legislation, 1994).

∙ **Social aspects:** The fact that TOG is plagiarized, illegally using trademarks or ideas will affect many operations problems. Websites rely on TOG's brand (customers, photos, etc.) for their benefit. Websites using TOG's brands and ideas illegally can sell poor quality products to TOG's customers, directly affecting TOG's brand image and negatively affecting the number of people. Poor quality glass products can pose risks to the user during use. Poor quality products sold under the TOG brand name will cost TOG many customers, damaging sales and possibly losing growth opportunities. In addition, TOG faces litigation issues to protect its brand and ideas. Lawsuits will cost TOG a lot of time and money to prove the right to use their trademarks.

**Situation 2: Employees sell TOG's customer information to a third party.**

In the e-commerce business, the purchase and sale of user data are aimed at exploiting and analyzing user information, thereby understanding user psychology and making policies to achieve the purpose. TOG has an abundant number of customers with a large amount of customer information stored in using and making transactions to the system. With this large amount of data, TOG can profit by selling this data to third parties.

∙ **Legal aspects:** According to The Data Protection Act 2018, PART 3, CHAPTER 1, Definitions, Section 33: ““Personal data breach” means a breach of security leading to the

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accidental or unlawful destruction, loss, alteration, unauthorized disclosure of, or access to, personal data transmitted, stored or otherwise processed.” (legislation, 2018). In this case, TOG violated the user's data when they sold user data information to a third party without the customer's consent. TOG will have to bear legal issues to resolve this issue.

∙ **Ethical aspects:** According to the Code of Professional Conduct issued by the British Computer Association in IT asset management: “Promote awareness of the Data Protection Act, in particular, the responsibilities of management to inform staff of their obligations under this Act.” (The BCS Qualifications and Standards Board, and the Trustee Board, 2004). In the above situation, TOG employees violated the application of data protection law and failed to comply with this act, and sold data to third parties.

**Situation 3: TOG's advertising department devises advertising strategies by overstating the product's utility and reducing the company's credibility.**

As an influential business, TOG's use of its brand advantage is essential to the strong growth and expansion. Thanks to TOG's reputation, TOG's advertising and marketing division has introduced flattering advertising strategies that are inevitable.

∙ **Ethical aspects:** It is unacceptable that TOG uses the trust of customers with TOG to develop advertising strategies that exaggerate product information for profit. Customers who buy the product will not get the product they expect. This affects the reputation of TOG company. With such advertising strategies, TOG can bring in big revenue, but at the same time, it will lose customers' trust with TOG.

∙ **Professional aspects:** TOG's advertising and marketing department did not have sufficient expertise in conducting tactical research, and it was likely that customers lost trust with TOG. In researching and making advertising strategies, TOG's advertising department needs to consider every aspect before applying it. The fact that the marketing department does not consider the risk of advertising strategy is unprofessional and affects the image of TOG and. TOG Company should improve the advertising and marketing department's capacity to have better strategies and build an image in the eyes of consumers.

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2. British Computer Society

BCS was established in 1957. BCS has an important role in educating IT professionals in improving IT careers. BCS has created an active community in promoting and developing computer fields and practices. The BCS code of conduct is divided into the following four contents:

∙ The Public Interest

∙ Duty to Employers and Clients

∙ Duty to the Profession

∙ Professional Competence and Integrity

2.1 Example for each of the four BCS Code of Conduct sections

A. Public Interest

**Scenario:** TOG website has a poor security system, and there is a risk of hacker intrusion to steal user information.

**Explain:** TOG may experience customer privacy issues. According to the BCS Codes of Conduct and Practice, Chapter 4: Code of Ethics and Professional Conduct, Section The Public Interest: “Members shall in their professional practice have regard to basic human rights and shall avoid any actions that adversely affect such rights.” (Computer Science Department, University of Cape Town, 2010 ). TOG is growing day by day, and the product consumer is growing larger, so the amount of customer information is increasing day by day. TOG needs to ensure the interests of customers, such as Secure customer information. TOG needs to improve security, ensure that customer data is carefully protected, and avoid customer information loss to avoid breaching customer privacy.

B. Professional Competence and Integrity

**Scenario:** TOG employees skip some steps in the delivery company.

**Explain:** According to the BCS Codes of Conduct and Practice, Chapter 4: Code of Ethics and Professional Conduct, Section Professional Competence and Integrity: “Members shall accept professional responsibility for their work and the work of their subordinates and associates under their direction, and shall not terminate any assignment except for good reason and on reasonable notice.” (Computer Science Department, University of Cape Town, 2010 ). TOG needs to track and help employees grasp information during delivery. All delivery personnel must adhere to the

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delivery process and must not skip any steps in the process. Skipping steps can affect the delivery process and cause issues such as sending the wrong address, wrong delivery time, etc. Individuals who do not comply with the process will be responsible for following only—company designation.

C. Relevant Authority

**Scenario:** TOG advertises false or overblown product quality information to stimulate buying demand from customers.

**Explain:** The TOG company did not make it transparent in advertising the product. According to the BCS Codes of Conduct and Practice, Chapter 4: Code of Ethics and Professional Conduct, Section Relevant Authority:” Members shall not misrepresent or withhold information on the capabilities of products, systems or services with which they are concerned or take advantage of the lack of knowledge or inexperience of others.” (Computer Science Department, University of Cape Town, 2010 ). TOG reviews how to advertise the product. In the advertising and marketing of TOG product information, it is forbidden to give false information, exaggerate and take advantage of customer trust to increase product sales. The truthfulness of product information will help TOG win the trust of customers and the company's reputation.

D. Duty to the profession

**Scenario:** In communicating about custom-made products, TOG's glassblower makes claims beyond his or her competence in product design.

**Explain:** The glass workers have violated their professional obligations. According to the BCS Codes of Conduct and Practice, Chapter 4: Code of Ethics and Professional Conduct, Section Duty to the profession:” Members shall not make any public statements in their professional capacity unless properly qualified and, where appropriate, authorized to do so, and shall have due regard to the likely consequences of any statement on others.” (Computer Science Department, University of Cape Town, 2010 ). In exchanging products with custom designs from customers, TOG glassblowers must ensure product quality and avoid making claims outside of expertise. Making claims beyond the capacity and not being performed will result in harmful effects on the image and reputation of the company.

V. Conclusion

The report provides arguments for applying the scrum / agile software development model to the TOG public software development project. Based on the information of TOG company and the

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software development team provided and the hypotheses, I gave the strengths and weaknesses when the two sides collaborated and developed a scrum/agile-based project and why this model should be applied. Besides, I also classified the functional requirements of the TOG, pointed out the requirements needed for the system, and eliminated them according to the MosCoW rule. I also raised some problems with Legal, Social, Ethical, and Professional Issues that the TOG company may face in the future and some solutions to resolve. Also, problems with the British Computer Society are raised with specific cases.

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