

VIVA - Can software improve the user experience for customers and employees of a milk subscription service?



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- Aims and Objectives
- Client
- Research Topics – Milk Industry, e-commerce, payments, platforms and user experience
- Research Methodology – Philosophy, approach, strategy and methods
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Aim & Objectives

Aim

To determine if the use of software can improve the subscription process of ordering milk for users in the Bridgend area in the context of user experience.

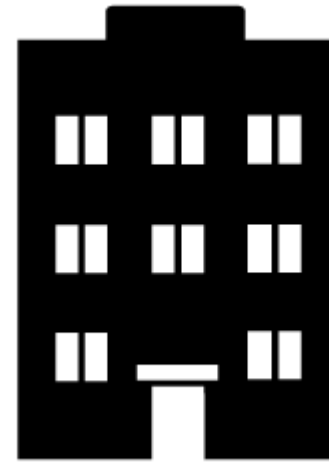
Objectives

- Conduct a literature review
- Development of an application based on research
- Evaluate user experience (UX) through qualitative data collection methods.

Client



Sells to local customers
and businesses



[1,2,3]



Milk Delivery Industry

Delivery

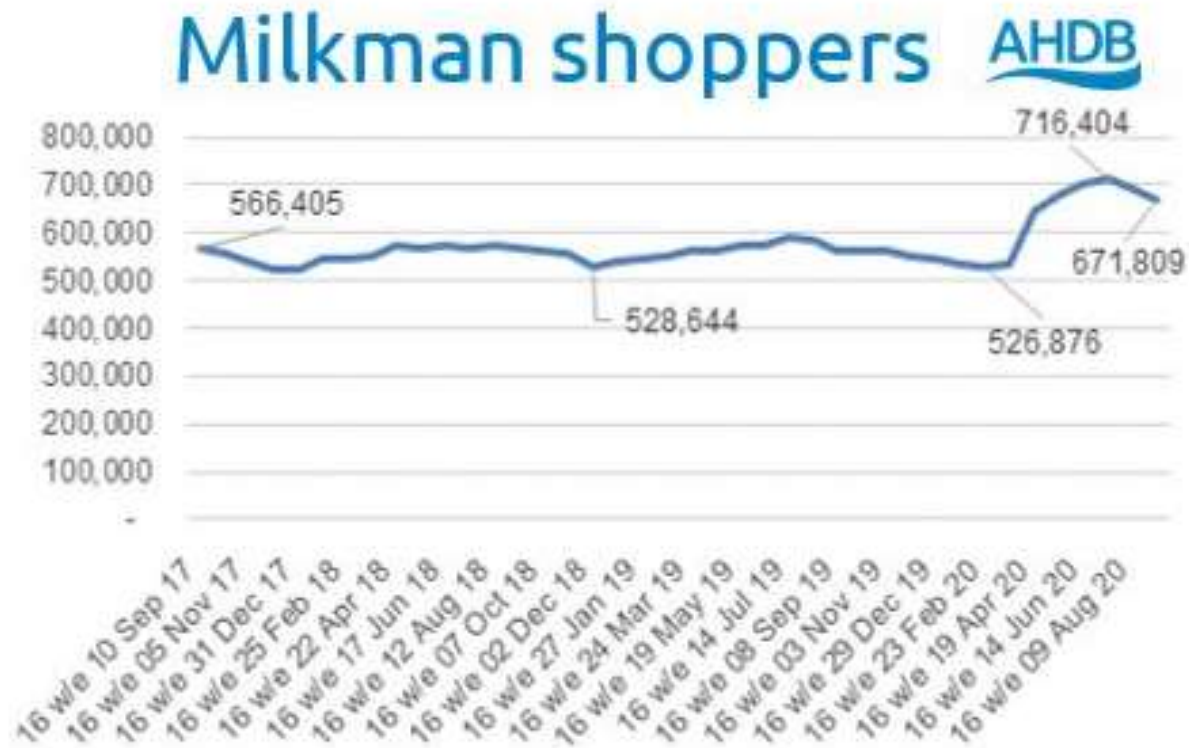


Supermarkets

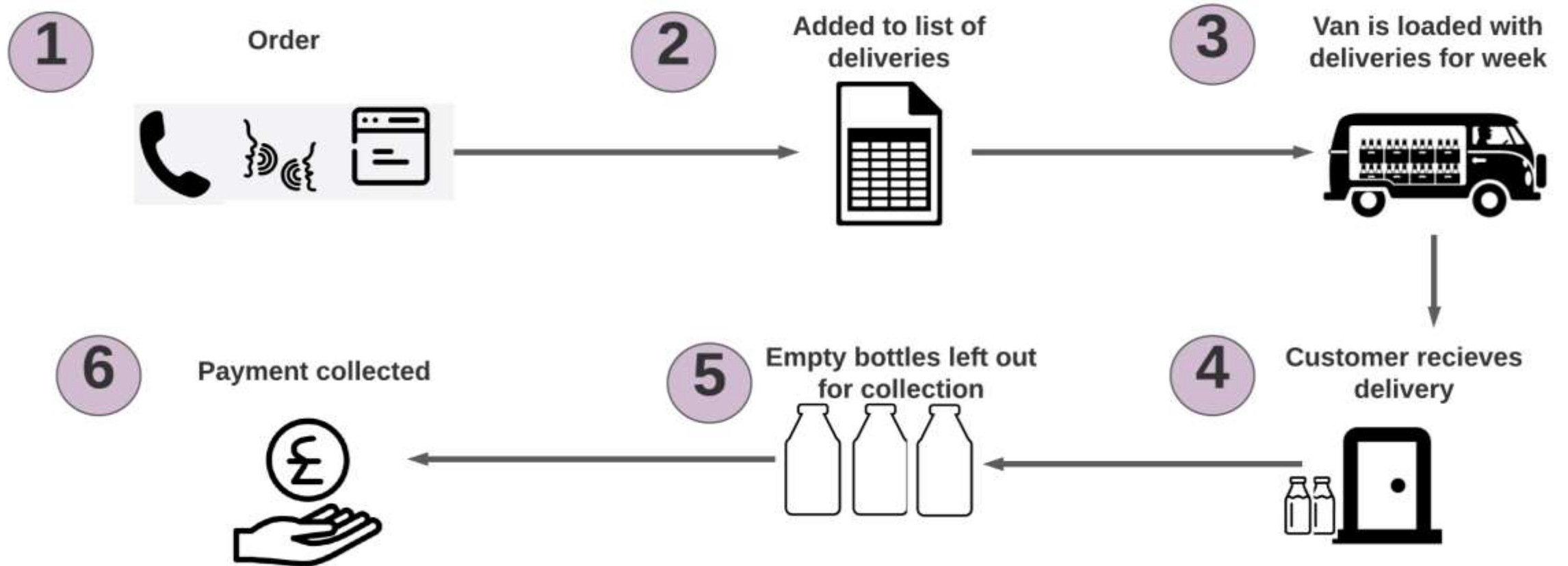


[4,5,6,7]

Milk Delivery Industry - Resurgence



Process



E-Commerce & Subscriptions

Types of e-commerce

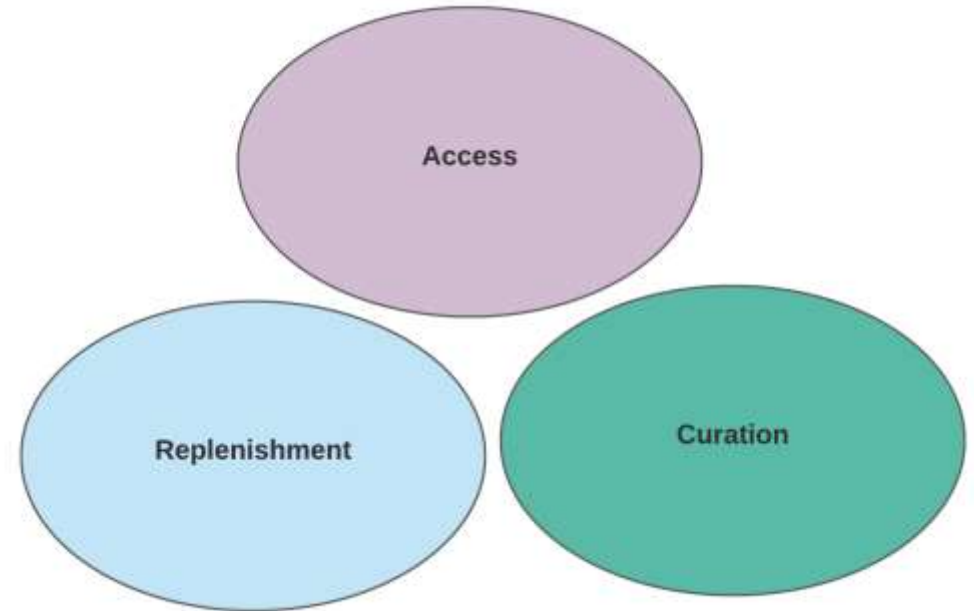
Business to Consumer (B2C)



Business to Business (B2B)



Subscriptions



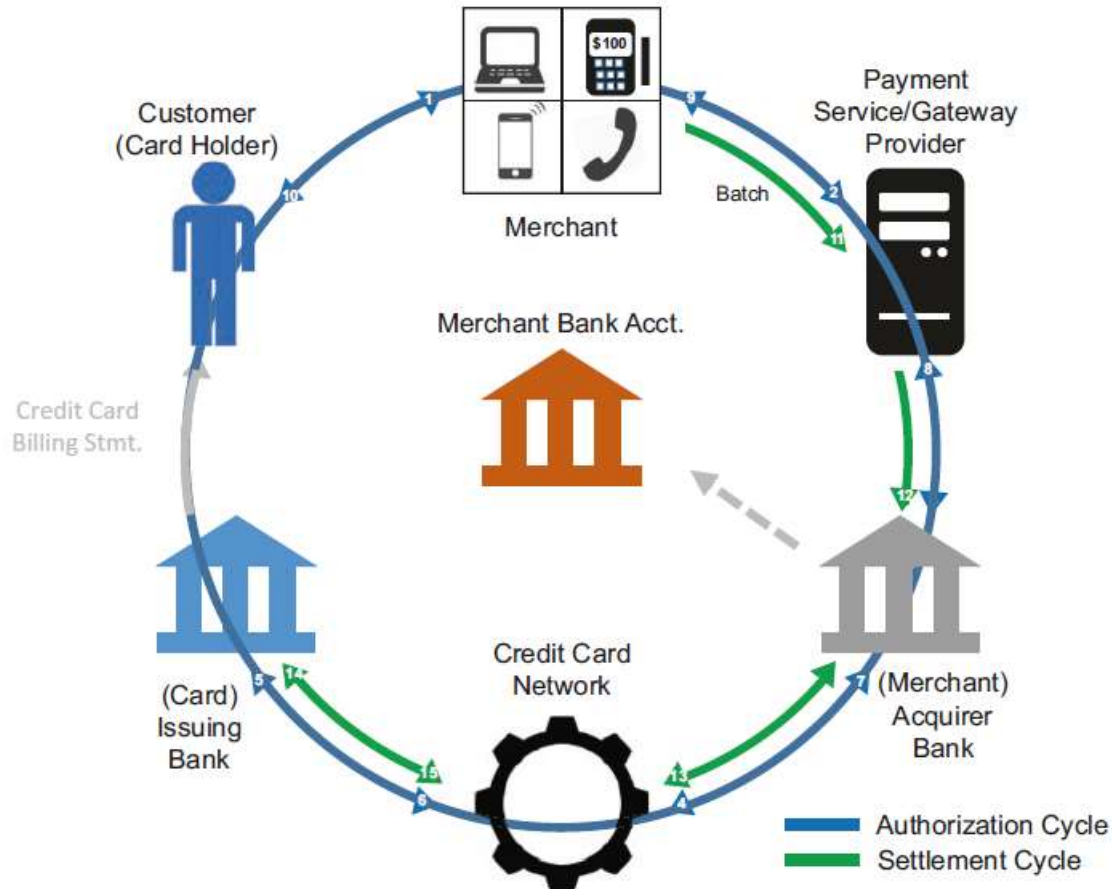
E-Commerce Payments

Merchant must be Payment Card Industry Data Security Standard compliant.

Compliance is dependent on the implementation of the payment system.

Why use 3rd party?

- More payment options for customers for cheaper.
- PCI compliance is easier as more duties are shifted to the 3rd party.
- No interchange rates.



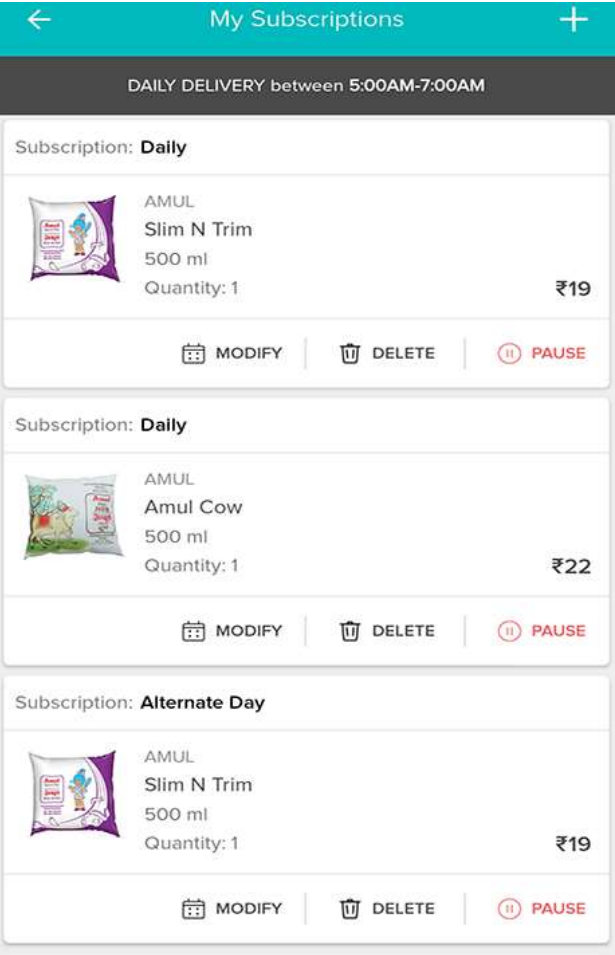
3rd Party Payments - Stripe vs PayPal



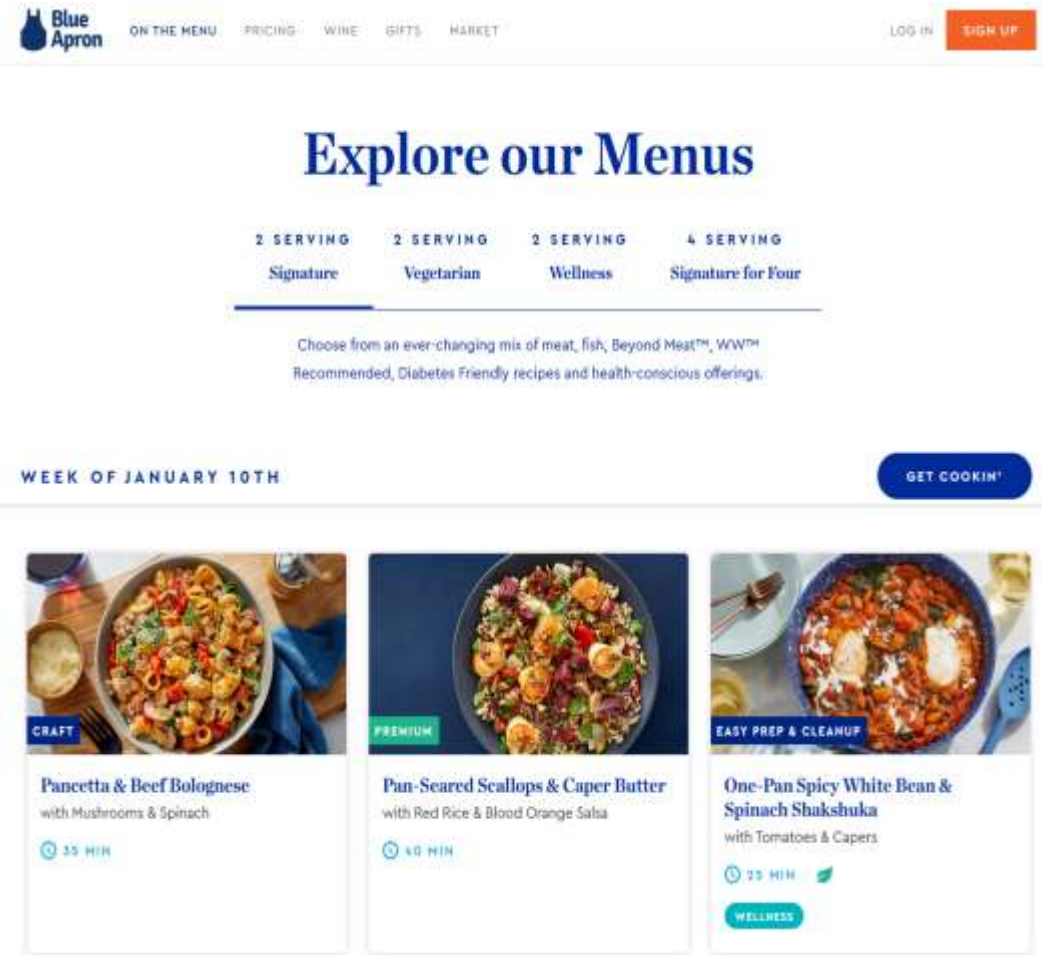
[13,14]

Current Subscription Applications

Milk Basket



Blue Apron



[17,18]

Mobile VS Web



Web Security



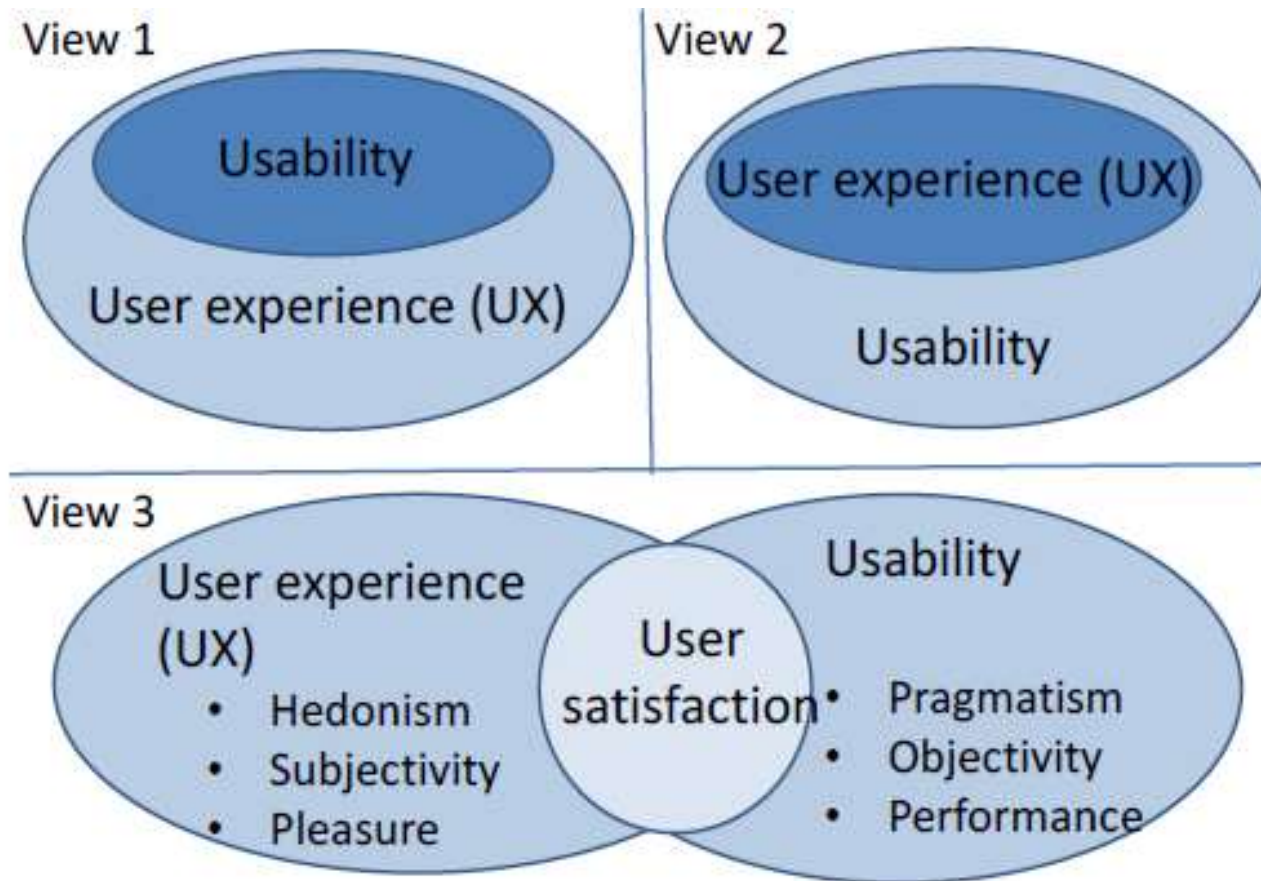
Attacks

SQL injections, price manipulation and session hijacking

Defence

Authentication, encryption and payment gateways

User Experience & Usability



User Experience

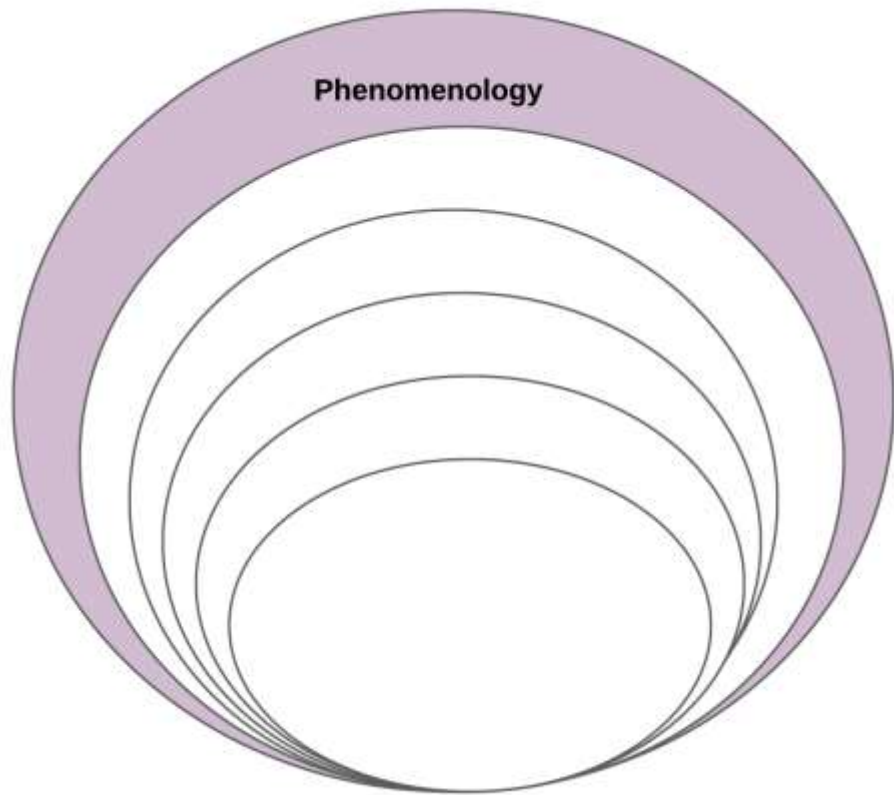
UX - *“Person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service.”*

Usability

“The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.”

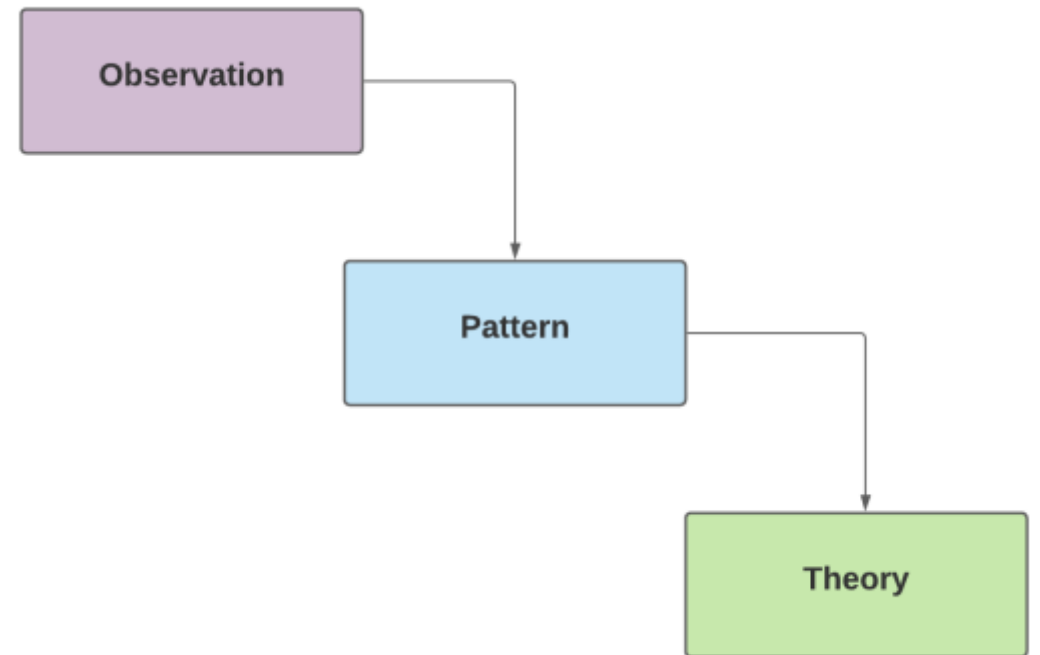
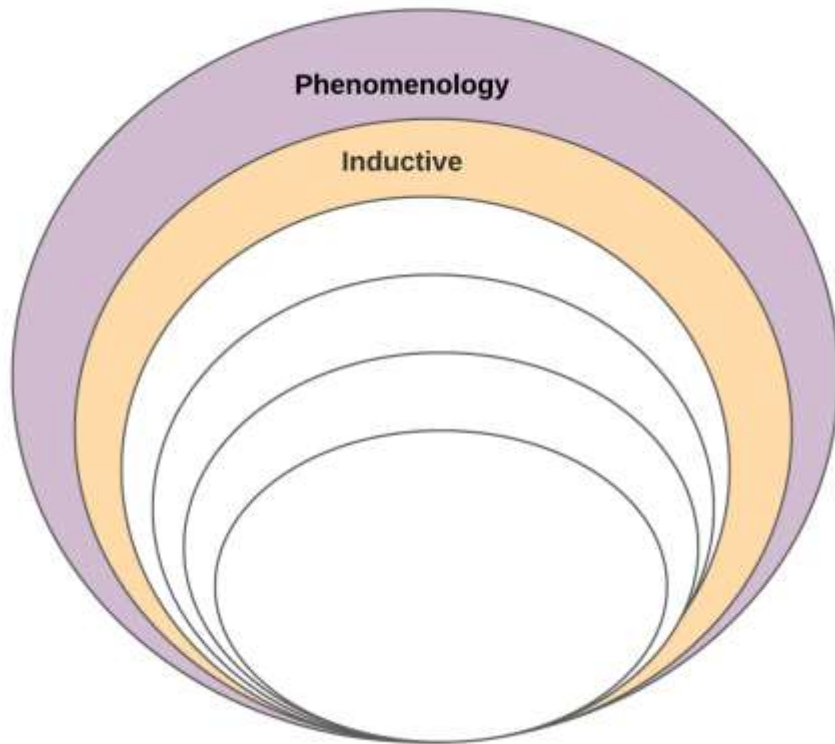
Research Methodology

Philosophy - Phenomenology

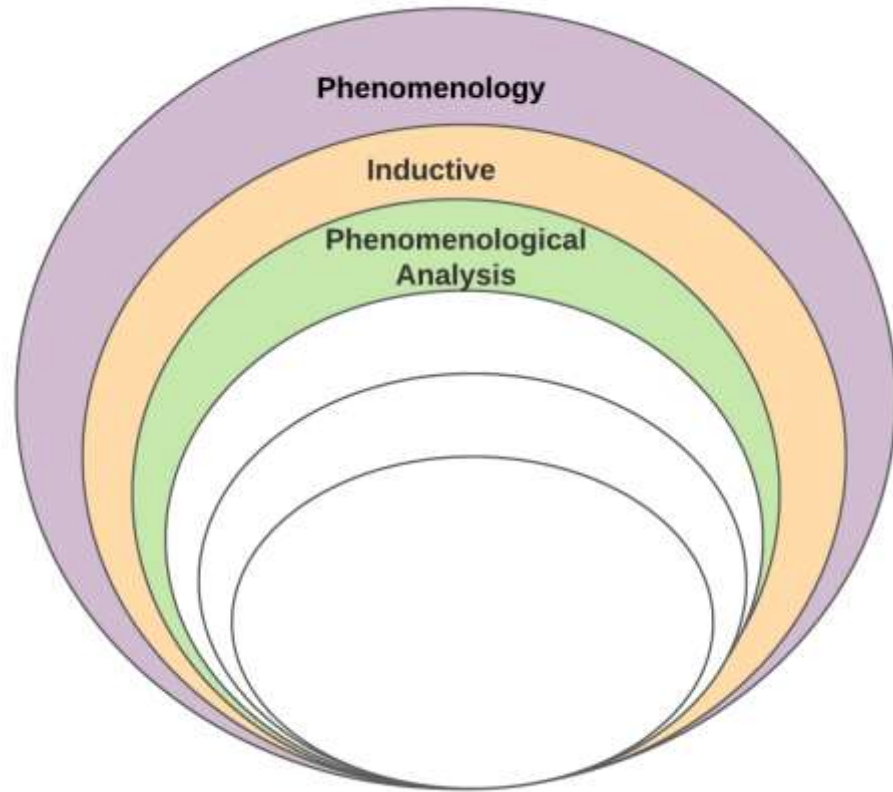


“The study of human experience and of the ways things present themselves to us in and through such experience”. [25]

Approach – Inductive



Strategy –Phenomenological Analysis



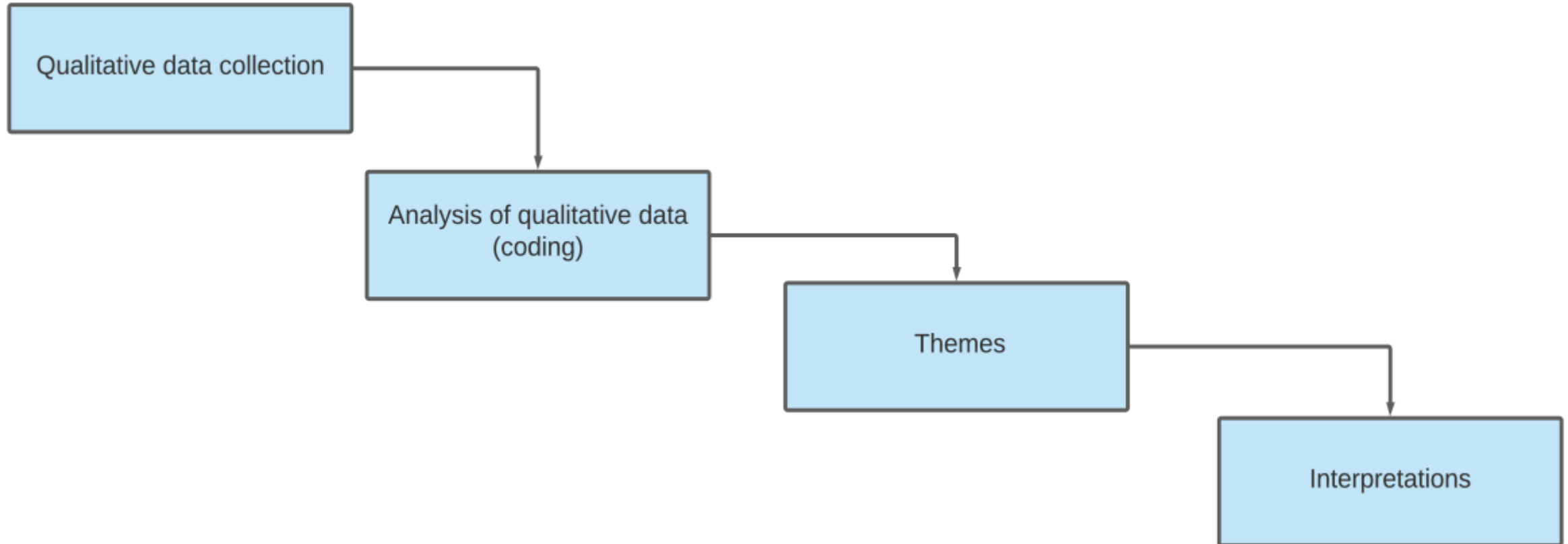
What?

Qualitative research strategy used to study how people experience a situation.[27]

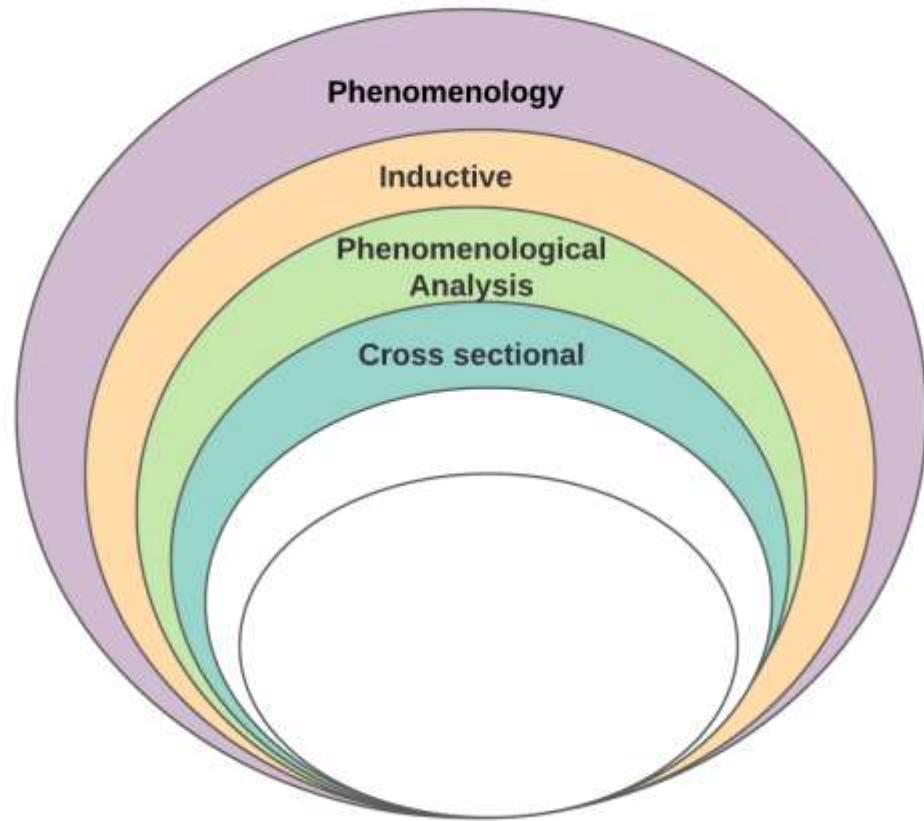
Why?

- Used in UX research before.
- Research question is about people's experiences with an application.

Strategy – Phenomenological Analysis



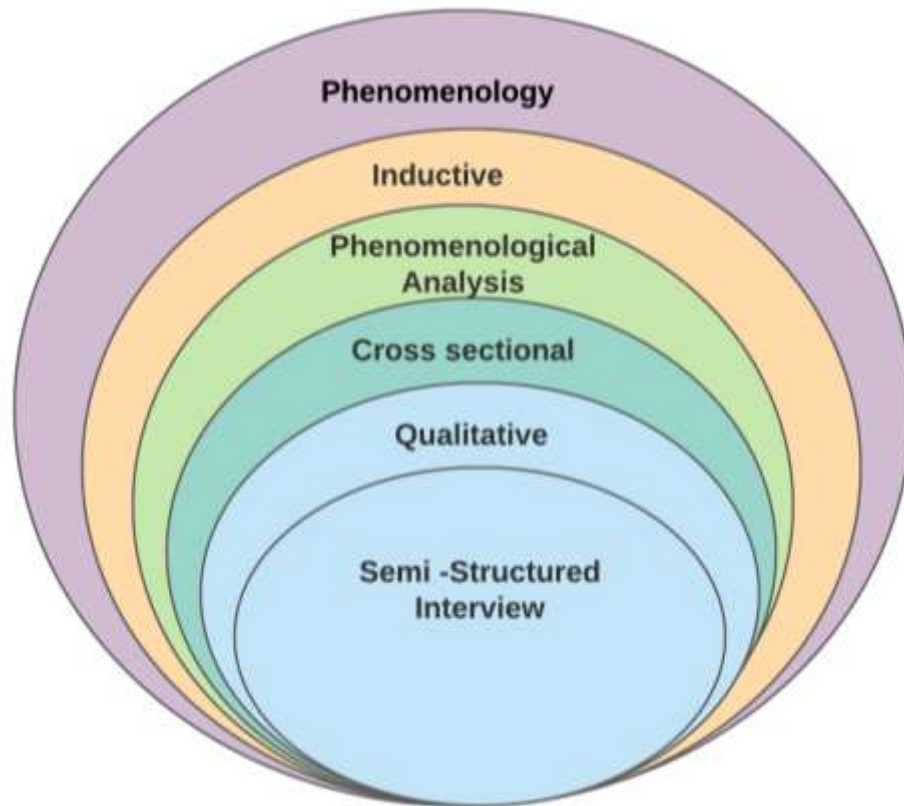
Time Horizon – Cross-Sectional



Why?

- Data will be collected once not repeatedly
- Time horizon short [28]

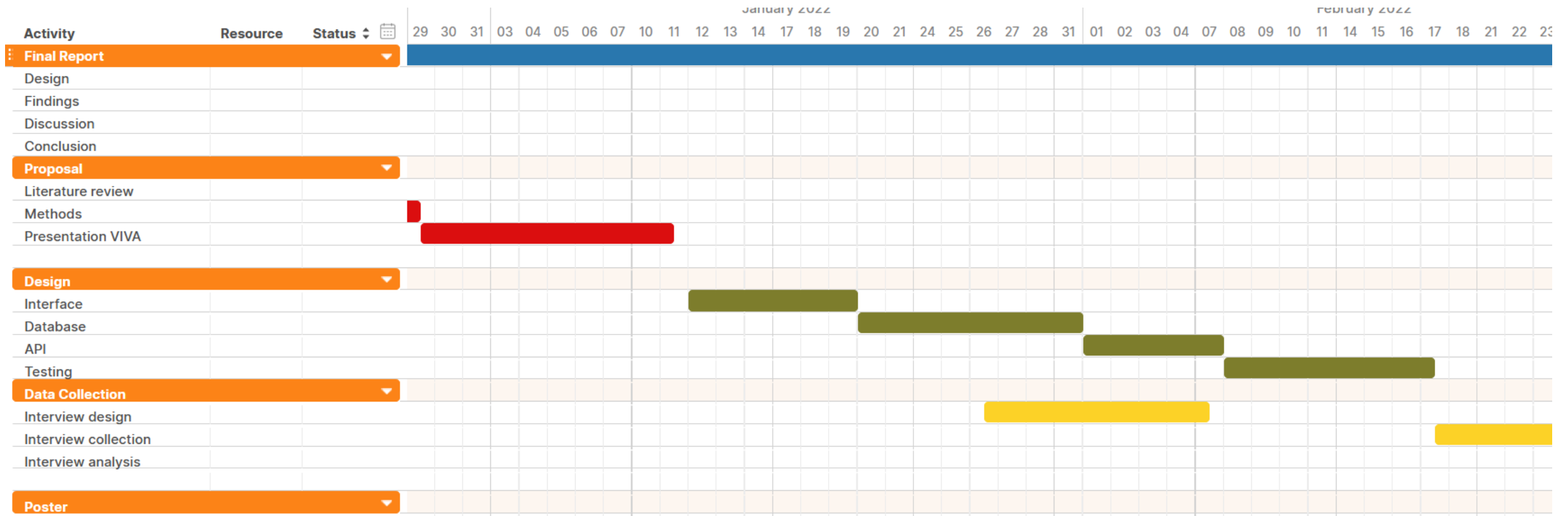
Data Collection Method – Semi-Structured Interview



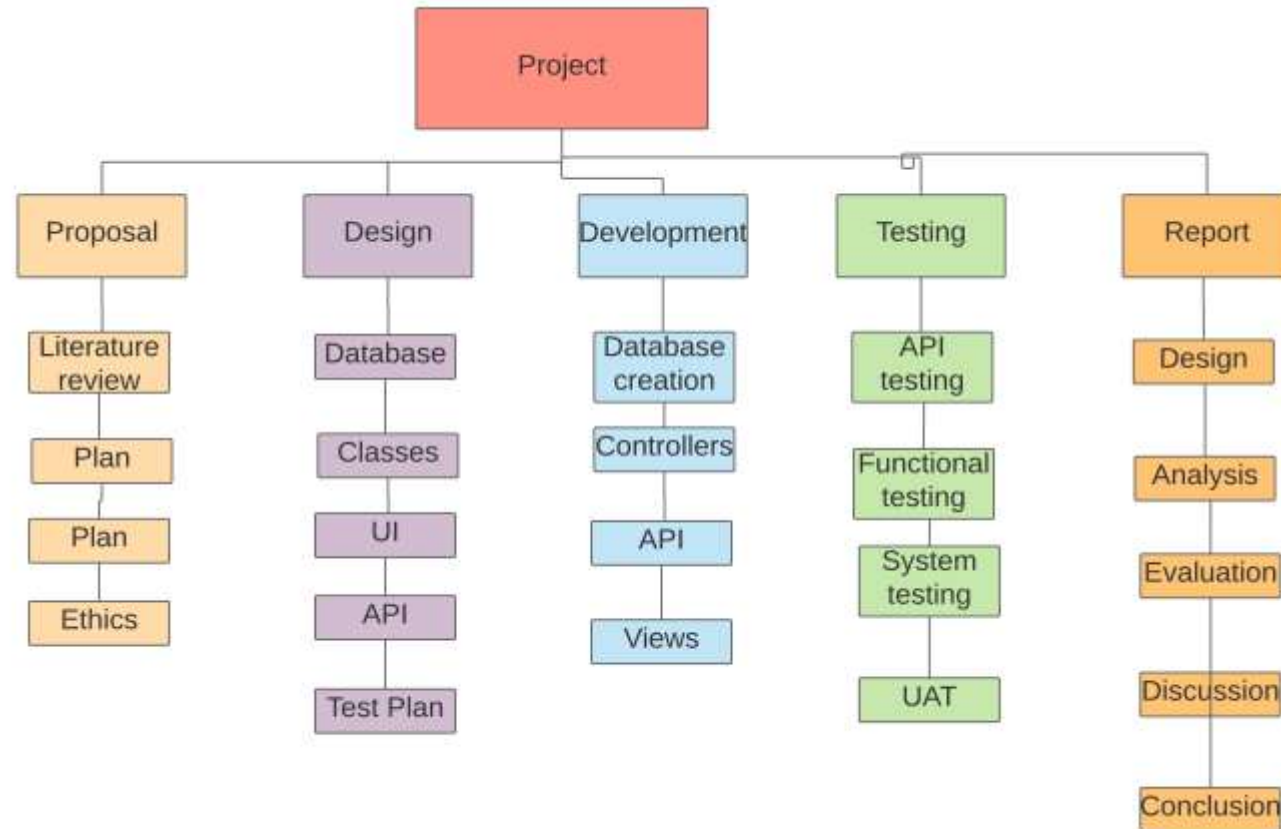
Why?

- Collecting qualitative data about user experience.
- Flexibility / Exploration
- Structure [29]

Project Plan



Work Breakdown Structure



Design

Selected Technologies & Tools

Front-end



Payment API



Back-end



[13,30,31]

UI - Homepage



Owens Dairies

Home

Subscribe

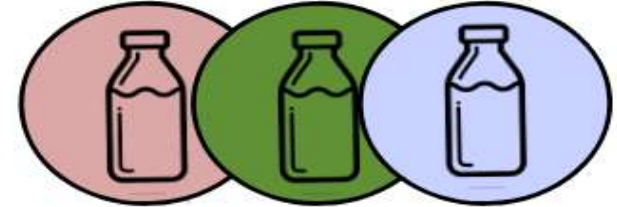
About

Contact Us



Fresh Bridgend milk delivered to your doorstep! Subscribing is as simple as

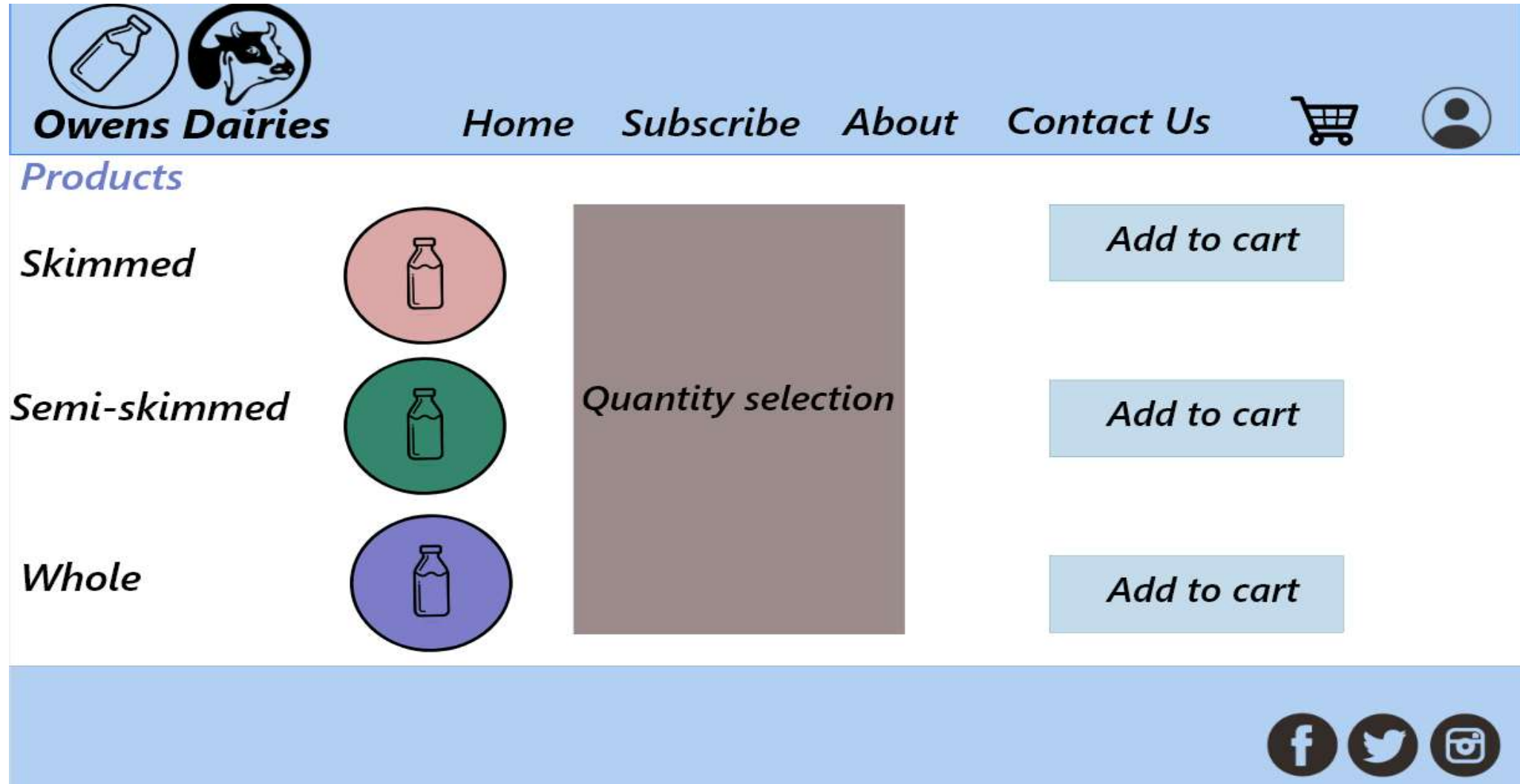
Diagram showing how to subscribe



Skimmed, semi-skimmed and full fat options



UI - Store

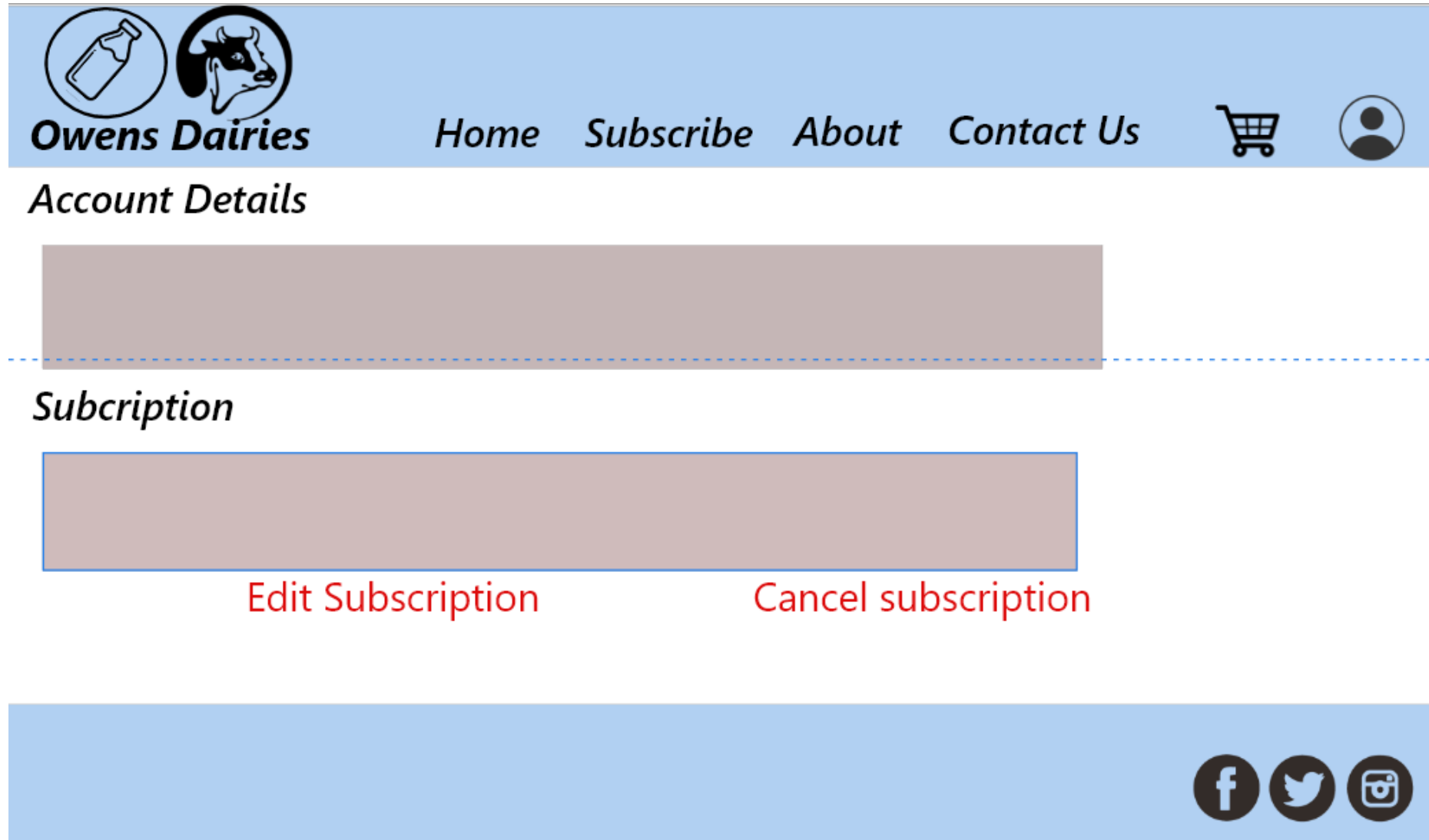


UI - Checkout

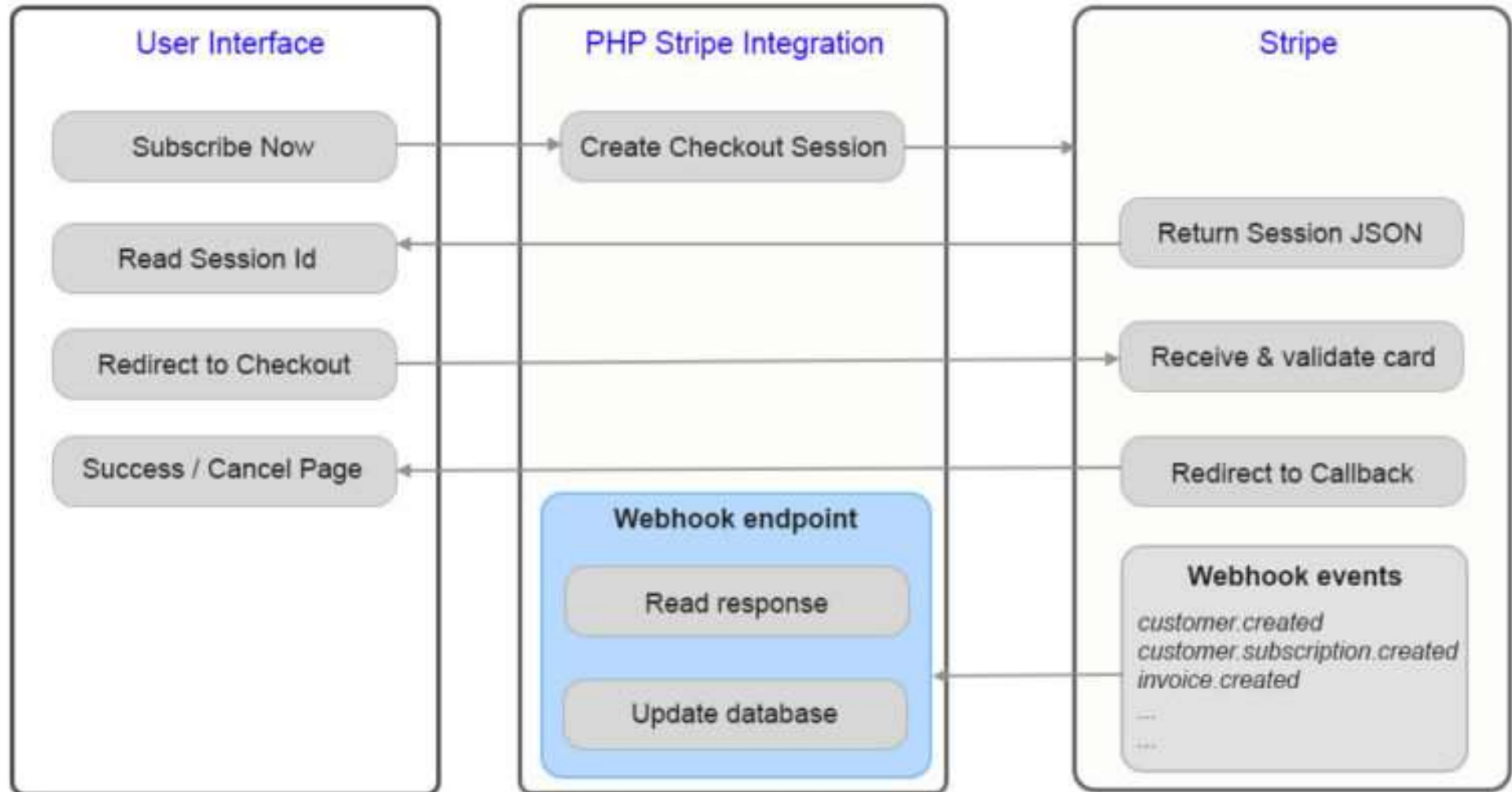
- Payment form using stripe will look similar to the right.
- Additional address, mobile and email field added within the checkout session.
- Payment.

The image shows a Stripe checkout form. At the top, there are four buttons for payment methods: 'Card' (highlighted with a blue border), 'Afterpay', 'Klarna', and a three-dot menu. Below these, the 'Card number' field contains the placeholder '1234 1234 1234 1234' and displays logos for VISA, Mastercard, AMEX, and ELO. The 'Expiry' field shows 'MM / YY' and the 'CVC' field shows 'CVC' with a card icon. The 'Country' field is a dropdown menu set to 'United Kingdom' and the 'Postal code' field contains 'WS11 1DB'.

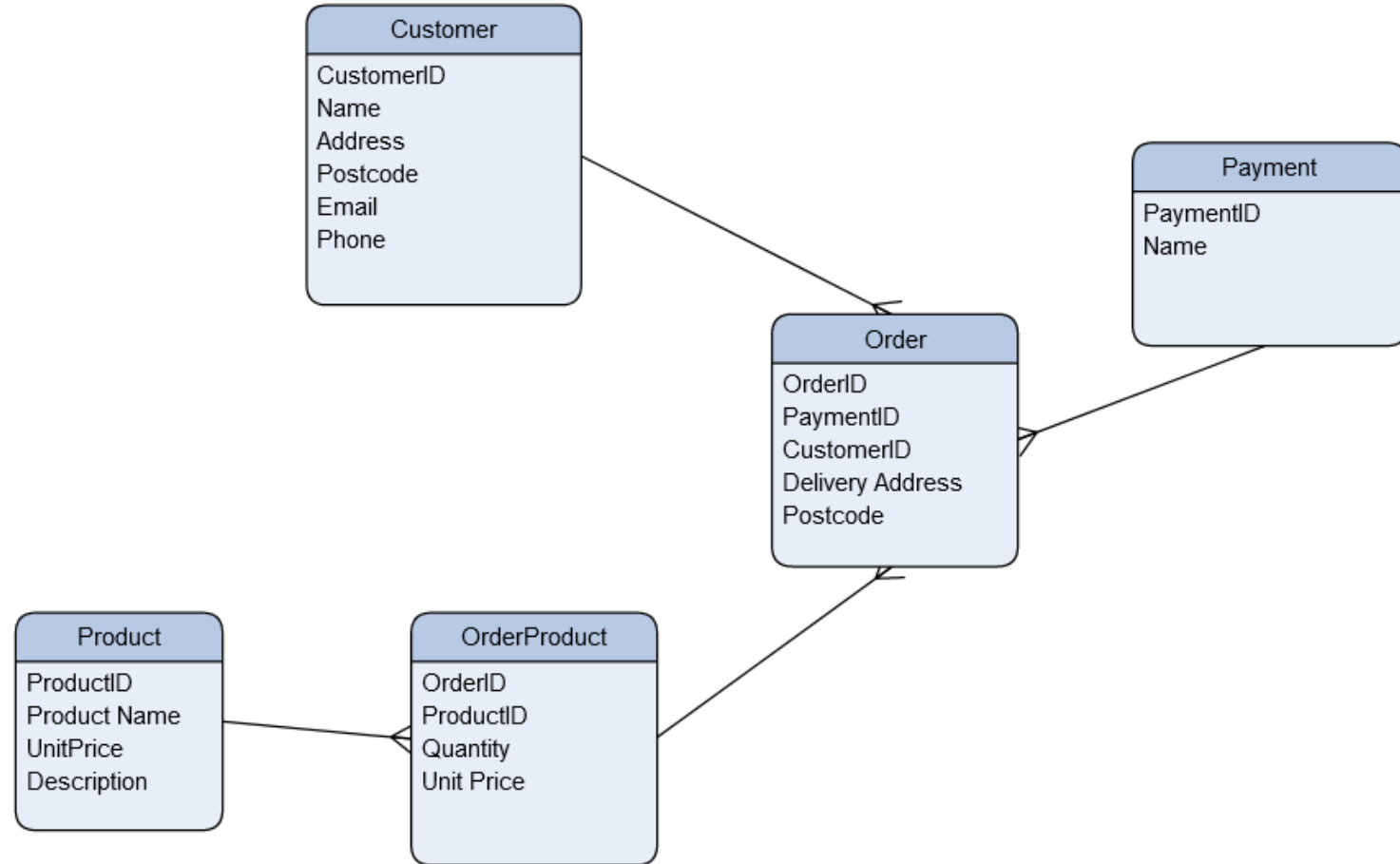
UI – Account



Stripe - API



Database



Thank you for listening

References

1. Oleynik A. bottle of milk [Internet]. 2017 [cited 1 January 2022]. Available from: <https://thenounproject.com/icon/bottle-of-milk-1035465/>
2. Sophie A. Business Building [Internet]. 2018 [cited 9 January 2022]. Available from: <https://thenounproject.com/icon/business-building-2013901/>
3. Berkowitz A. Person [Internet]. 2013 [cited 1 January 2022]. Available from: <https://thenounproject.com/icon/person-23359/>
4. Maxim A. Delivery and transportation of dairy products to a retail store concept with worker loading milk into a cargo van, flat vector illustration isolated on white background. [Internet]. 2022 [cited 1 January 2022]. Available from: <https://www.shutterstock.com/image-vector/delivery-transportation-dairy-products-retail-store-2002500590>
5. Kurniawan I. Supermarket [Internet]. 2021 [cited 1 January 2022]. Available from: <https://thenounproject.com/icon/supermarket-4476505/>
6. 6. Graphics T. Line Graph [Internet]. 2016 [cited 2 January 2022]. Available from: <https://thenounproject.com/icon/line-graph-580866/>
7. Blake F. Doorstep delivery? will it survive?. International Journal of Dairy Technology. 1988;41(4):104-108. doi:10.1111/j.1471-0307.1988.tb00612.x
8. Stannard S. The return of the milkman? | AHDB [Internet]. Ahdb.org.uk. 2022 [cited 8 December 2021]. Available from: <https://ahdb.org.uk/news/consumer-insight-the-return-of-the-milkman>
9. Tian Y, Stewart C. History of E-Commerce. Encyclopedia of E-Commerce, E-Government, and Mobile Commerce [Internet]. 2006 [cited 11 December 2021];2:559-564. Available from: <https://www.igi-global.com/chapter/history-commerce/12594>
10. Chen T, Fenyo K, Yang S, Zhang J. Thinking inside the subscription box: New research on e-commerce consumers [Internet]. www.mckinsey.com. 2022 [cited 13 December 2021]. Available from: [link](#)
11. Turban E, Outland J, King D, Lee J, Liang T, Turban D. Electronic Commerce Payment Systems. Springer Texts in Business and Economics [Internet]. 2017 [cited 18 December 2021];:457-499. Available from: https://link.springer.com/chapter/10.1007/978-3-319-58715-8_12
12. Securing eCommerce [Internet]. Pcisecuritystandards.org. 2022 [cited 19 December 2021]. Available from: https://www.pcisecuritystandards.org/pdfs/best_practices_securing_ecommerce.pdf
13. Stripe. Stripe Logo Marks [Internet]. [cited 4 January 2022]. Available from: <https://www.google.com/imgres?imgurl=https%3A%2F%2Fstripe.com%2Fimg%2Fv3%2Fhome%2Ftwitter.png&imgrefurl=https%3A%2F%2Fstripe.com%2Fmarks%2Flegal&tbnid=CS2qFveCSmlf2M&vet=12ahUKEwiqLi32Zr1AhUkgM4BHXXYCGAQMygFegUIARDqAQ..i&docid=OtHjTlt-fkldoM&w=512&h=512&itg=1&q=stripe%20logo&hl=en-GB&client=firefox-b-d&ved=2ahUKEwiqLi32Zr1AhUkgM4BHXXYCGAQMygFegUIARDqAQ>

14. PayPal Logo [Internet]. [cited 6 January 2022]. Available from: https://www.google.com/url?sa=i&url=https%3A%2F%2Fmobile.twitter.com%2Fpaypal&psig=AOvVaw21yn5hcWawJoyGK_J2xcwl&ust=1641849854586000&source=images&cd=vfe&ved=0CAwQjhqFwoTCIDXhb7NpfUCFQAAAAAdAAAAABAD
15. Radonic M. Payment processing in web-based environments - Benchmark of the World's Leading Payment Processors. Doing business in the digital age: Challenges, approaches and solutions [Internet]. Belgrade: XVI International Symposium Symorg 2018; 2018 [cited 19 December 2021]. Available from: https://www.researchgate.net/publication/346107846_Payment_processing_in_web-based_environments_-_Benchmark_of_the_World's_Leading_Payment_Processors
16. Niranjnamurthy M. E-commerce: Recommended Online Payment Method – PayPal. International Journal of Computer Science and Mobile Computing [Internet]. 2014 [cited 20 December 2021];3(7):669-679. Available from: [link](#)
17. Kaushal L. Milk Basket: A sustainable & innovative business model. Achieving business excellence through sustainability and innovation [Internet]. Delhi: Delhi Institute of Advanced Studies; 2019 [cited 10 December 2021]. p. 180-186. Available from: <https://dias.ac.in/wp-content/uploads/2020/03/NationalConference2019Proceedings.pdf#page=194>
18. Bhattacharya S. Blue Apron: Disruption in the U.S. food industry? [Internet]. Ivey Publishing; 2018. Available from: <https://eprints.ncl.ac.uk/252462>
19. Web Icon [Internet]. 2021 [cited 4 January 2022]. Available from: <https://thenounproject.com/icon/web-4481293/>
20. Medina L. Mobile Icon [Internet]. 2021 [cited 4 January 2022]. Available from: <https://thenounproject.com/icon/mobile-4480189/>
21. Lengstorf J, Leggetter P. Choosing Web Apps Over Native Apps. Realtime Web Apps [Internet]. 2013 [cited 15 December 2021];:57-64. Available from: https://link.springer.com/chapter/10.1007/978-1-4302-4621-3_4
22. Mikkonen T. Apps vs. Open Web: The Battle of the Decade [PhD]. Tampere University of Technology; 2011. Available from: https://www.researchgate.net/publication/265949107_Apps_vs_Open_Web_The_Battle_of_the_Decade
23. I.M M, al e. How can usability contribute to user experience?: a study in the domain of e-commerce. SAICSIT '12: Proceedings of the South African Institute for Computer Scientists and Information Technologists Conference [Internet]. SAICSIT; 2012 [cited 22 December 2021]. p. 216-224. Available from: <https://dl.acm.org/doi/10.1145/2389836.2389862>
24. Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems [Internet]. Iso.org. 2022 [cited 21 December 2021]. Available from: <https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-1:v1:en>
25. Gallagher S. What Is Phenomenology?. Phenomenology. 1st ed. London: Palgrave Macmillan; 2012 p. 7-18.

26. Saunders M, et al. Understanding research philosophies and approaches. Research Methods for Business Students. 5th ed. Harlow: Pearson; 2009 p. 106-136
27. Linder J, Arvola M. IPA in UX Research: Interpretative Phenomenological Analysis in a User Experience Design Practice. ECCE 2017: Proceedings of the European Conference on Cognitive Ergonomics 2017 [Internet]. 2017 [cited 5 January 2022]. Available from: <https://doi.org/10.1145/3121283.3121299>
28. Longitudinal vs cross-sectional studies [Internet]. Learning.closer.ac.uk. 2022 [cited 28 December 2021]. Available from: <https://learning.closer.ac.uk/learning-modules/introduction/types-of-longitudinal-research/longitudinal-versus-cross-sectional-studies/>
29. Mathers N, al e. Using Interviews in a Research Project. Sheffield: Trent Focus Group; 2022 p. 2-5.
30. p92. HTML, CSS and JS [Internet]. 2022 [cited 5 January 2022]. Available from: <https://p92.com/techdetails/html-css-and-javascript>
31. anychart. PHP, Laravel and MySQL Integration Template [Internet]. 2022 [cited 5 January 2022]. Available from: <https://www.anychart.com/technical-integrations/samples/php-laravel-mysql-template/>
32. Stripe. Accept a Payment - Custom [Internet]. [cited 6 January 2022]. Available from: <https://stripe.com/docs/payments/accept-a-payment?platform=web&ui=elements>
33. Integrate Recurring Payment using Stripe Checkout with Billing [Internet]. 2020 [cited 6 January 2022]. Available from: <https://phppot.com/php/manage-recurring-payments-using-stripe-billing-in-php/>

Bibliography

Clifford G. THE FUTURE OF MILK DISTRIBUTION IN THE UK. International Journal of Dairy Technology. 1976;29(4):213-217. doi:10.1111/j.1471-0307.1976.tb00437.x

Blake F. Doorstep delivery? will it survive?. International Journal of Dairy Technology. 1988;41(4):104-108. doi:10.1111/j.1471-0307.1988.tb00612.x

Stannard S. The return of the milkman? | AHDB [Internet]. Ahdb.org.uk. 2022 [cited 8 December 2021]. Available from: <https://ahdb.org.uk/news/consumer-insight-the-return-of-the-milkman>

Kaushal L. Milk Basket: A sustainable & innovative business model. Achieving business excellence through sustainability and innovation [Internet]. Delhi: Delhi Institute of Advanced Studies; 2019 [cited 10 December 2021]. p. 180-186. Available from: <https://dias.ac.in/wp-content/uploads/2020/03/NationalConference2019Proceedings.pdf#page=194>

Kutz M. Introduction to E-Commerce: Combining Business and Information Technology [Internet]. 1st ed. bookboon; 2016 [cited 11 December 2021]. Available from: <https://irp-cdn.multiscreensite.com/1c74f035/files/uploaded/introduction-to-e-commerce.pdf>

Tian Y, Stewart C. History of E-Commerce. Encyclopedia of E-Commerce, E-Government, and Mobile Commerce [Internet]. 2006 [cited 11 December 2021];2:559-564. Available from: <https://www.igi-global.com/chapter/history-commerce/12594>

Chen T, Fenyo K, Yang S, Zhang J. Thinking inside the subscription box: New research on e-commerce consumers [Internet]. www.mckinsey.com. 2022 [cited 13 December 2021]. Available from: [link](#)

Tan W, Chen B. Enhancing subscription-based e-commerce services through gambled price discounts. Journal of Retailing and Consumer Services. 2021;61:102525. DOI: 10.1016/j.jretconser.2021.102525

Bhattacharya S. Blue Apron: Disruption in the U.S. food industry? [Internet]. Ivey Publishing; 2018. Available from: <https://eprints.ncl.ac.uk/252462>

Apron B. Blue Apron - Privacy Policy [Internet]. Blueapron.com. 2022 [cited 15 December 2021]. Available from: <https://www.blueapron.com/pages/privacy>

Erken A, Cederblad C, Saller C, Wahlstrom D, Haubo E. The Design and Implementation of a Subscription-Based E-shop That Is Easily Navigated and Visually Appealing To Its Users [Bachelor]. Linkopings University; 2022.

Lengstorf J, Leggetter P. Choosing Web Apps Over Native Apps. Realtime Web Apps [Internet]. 2013 [cited 15 December 2021];:57-64. Available from: https://link.springer.com/chapter/10.1007/978-1-4302-4621-3_4

Mikkonen T. Apps vs. Open Web: The Battle of the Decade [PhD]. Tampere University of Technology; 2011. Available from: https://www.researchgate.net/publication/265949107_Apps_vs_Open_Web_The_Battle_of_the_Decade

Jain A, Shanbhag D. Addressing Security and Privacy Risks in Mobile Applications. IT Professional [Internet]. 2012 [cited 17 December 2021];14(5):28-33. Available from: <https://ieeexplore.ieee.org/document/6243128>

Sharma P, Gupta D, Khanna A. e-Commerce Security: Threats, Issues, and Methods. Cyber Security in Parallel and Distributed Computing. 2019;:61-77. 10.1002/9781119488330.ch4

Turban E, Outland J, King D, Lee J, Liang T, Turban D. Electronic Commerce Payment Systems. Springer Texts in Business and Economics [Internet]. 2017 [cited 18 December 2021];:457-499. Available from: https://link.springer.com/chapter/10.1007/978-3-319-58715-8_12

Securing eCommerce [Internet]. Pcisecuritystandards.org. 2022 [cited 19 December 2021]. Available from: https://www.pcisecuritystandards.org/pdfs/best_practices_securing_ecommerce.pdf

Lowry P, Wells T, Moody G, Humpherys S, Kettles D. Online Payment Gateways Used to Facilitate E-Commerce Transactions and Improve Risk Management. Communications of the Association for Information Systems [Internet]. 2006 [cited 19 December 2021];17(6). Available from: https://www.researchgate.net/publication/228280377_Online_Payment_Gateways_Used_to_Facilitate_E-Commerce_Transactions

Radonic M. Payment processing in web-based environments - Benchmark of the World's Leading Payment Processors. Doing business in the digital age: Challenges, approaches and solutions [Internet]. Belgrade: XVI International Symposium Symorg 2018; 2018 [cited 19 December 2021]. Available from:

https://www.researchgate.net/publication/346107846_Payment_processing_in_web-based_environments_-_Benchmark_of_the_World's_Leading_Payment_Processors

Niranjanamurthy M. E-commerce: Recommended Online Payment Method – PayPal. International Journal of Computer Science and Mobile Computing [Internet]. 2014 [cited 20 December 2021];3(7):669-679. Available from: [link](#)

Khan I, et al. A Compendious Study of Online Payment Systems: Past Developments, Present Impact, and Future Considerations. International Journal of Advanced Computer Science and Applications [Internet]. 2017 [cited 20 December 2021];8(5); 256-271. Available from: <https://pdfs.semanticscholar.org/3e60/35d2232d5f3db969a88d48695b6c58361609.pdf>

Ergonomics of human-system interaction — Part 210: Human-centred design for interactive systems [Internet]. Iso.org. 2022 [cited 21 December 2021]. Available from: <https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-1:v1:en>

I.M M, al e. How can usability contribute to user experience?: a study in the domain of e-commerce. SAICSIT '12: Proceedings of the South African Institute for Computer Scientists and Information Technologists Conference [Internet]. SAICSIT; 2012 [cited 22 December 2021]. p. 216-224. Available from: <https://dl.acm.org/doi/10.1145/2389836.2389862>

Nielsen J. Ten Usability Heuristics. [Internet] [Cited 22 December 2021] Available from: <https://pdfs.semanticscholar.org/5f03/b251093aee730ab9772db2e1a8a7eb8522cb.pdf>

van der Krieke L, Emerencia A, Aiello M, Sytema S. Usability Evaluation of a Web-Based Support System for People With a Schizophrenia Diagnosis. Journal of Medical Internet Research [Internet]. 2012 [cited 23 December 2021];14(1):e24. Available from: <https://www.jmir.org/2012/1/e24/?newDesign>

Moran K. Usability Testing 101 [Internet]. nngroup. 2022 [cited 23 December 2021]. Available from: <https://www.nngroup.com/articles/usability-testing-101/>

Ritonumm S. USER EXPERIENCE ON AN ECOMMERCE WEBSITE – A CASE STUDY [Masters]. Jyväskylä University; 2020. Available from: <https://jyx.jyu.fi/bitstream/handle/123456789/68647/URN%3aNB%3afi%3ajyu-202004232856.pdf?sequence=1&isAllowed=y>

Law E. The measurability and predictability of user experience. Proceedings of the 3rd ACM SIGCHI symposium on Engineering interactive computing systems - EICS '11 [Internet]. Pisa; 2011 [cited 26 December 2021]. p. 1-9. Available from: <http://doi:10.1145/1996461.1996485>

Gallagher S. What Is Phenomenology?. Phenomenology. 1st ed. London: Palgrave Macmillan; 2012 p. 7-18.

Saunders M, et al. Understanding research philosophies and approaches. Research Methods for Business Students. 5th ed. Harlow: Pearson; 2009 p. 106-136

Neubauer B, Witkop C, Varpio L. How phenomenology can help us learn from the experiences of others. Perspectives on Medical Education [Internet]. 2019 [cited 27 December 2021];8(2):90-97. Available from: <https://doi.org/10.1007/s40037-019-0509-2>

Longitudinal vs cross-sectional studies [Internet]. Learning.closer.ac.uk. 2022 [cited 28 December 2021]. Available from: <https://learning.closer.ac.uk/learning-modules/introduction/types-of-longitudinal-research/longitudinal-versus-cross-sectional-studies/>

Mathers N, al e. Using Interviews in a Research Project. Sheffield: Trent Focus Group; 2022 p. 2-5.

Alshamrani A, Bahattab A. A Comparison Between Three SDLC Models Waterfall Model, Spiral Model, and Incremental/Iterative Model. International Journal of Computer Science Issues [Internet]. 2015 [cited 29 December 2021];12(1):106-110. Available from: <https://www.ijcsi.org/papers/IJCSI-12-1-1-106-111.pdf>

Velankar S, Mane D. Comparative Analysis of Bootstrap and Ulkit framework. International Research Journal of Engineering and Technology [Internet]. 2017 [cited 30 December 2021];4(6):2551-2554. Available from: [link](#)

Ulah S, al e. Developing an E-Commerce Website. International Conference on Microelectronics, Computing and Communications [Internet]. Dhaka: IEEE; 2016 [cited 30 December 2021]. p. 1-4. Available from: <https://ieeexplore.ieee.org/document/7522526>

N. Yadav, D. S. Rajpoot and S. K. Dhakad, "LARAVEL: A PHP Framework for E-Commerce Website," 2019 Fifth International Conference on Image Information Processing (ICIIP), 2019, pp. 503-508, doi: 10.1109/ICIIP47207.2019.9225771