

FACTORS INFLUENCING INTENTION TO PURCHASE
LOCAL COMMUNITY PRODUCT ON E-COMMERCE WEBSITE:
CASE OF ONE TAMBON ONE PRODUCT (OTOP) IN THAILAND



Miss Krittika Akasarakul

บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)
เป็นแฟ้มข้อมูลของนิสิตเจ้าของวิทยานิพนธ์ ที่ส่งผ่านทางบัณฑิตวิทยาลัย

The abstract and full text of theses from the academic year 2011 in Chulalongkorn University Intellectual Repository (CUIR)

are the theses authors have submitted through the University Graduate School.

for the Degree of Master of Science Program in Computer Science and Information

Technology

Department of Mathematics and Computer Science

Faculty of Science

Chulalongkorn University

Academic Year 2017

Copyright of Chulalongkorn University

ปัจจัยที่มีอิทธิพลต่อความตั้งใจในการซื้อสินค้าชุมชนท้องถิ่นบนเว็บไซต์อีคอมเมิร์ซ:
กรณีสินค้าหนึ่งตำบลหนึ่งผลิตภัณฑ์ (OTOP) ในประเทศไทย



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาวิทยาการคอมพิวเตอร์และเทคโนโลยีสารสนเทศ ภาควิชาคณิตศาสตร์และวิทยาการ

คอมพิวเตอร์

คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2560

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

Thesis Title	FACTORS INFLUENCING INTENTION TO PURCHASE LOCAL COMMUNITY PRODUCT ON E-COMMERCE WEBSITE: CASE OF ONE TAMBON ONE PRODUCT (OTOP) IN THAILAND
By	Miss Krittika Akasarakul
Field of Study	Computer Science and Information Technology
Thesis Advisor	Associate Professor Nagul Cooharajanane, Ph.D.

Accepted by the Faculty of Science, Chulalongkorn University in Partial
Fulfillment of the Requirements for the Master's Degree

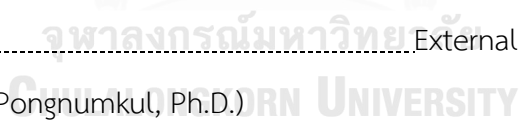
.....Dean of the Faculty of Science
(Professor Polkit Sangvanich, Ph.D.)

THESIS COMMITTEE

.....Chairman
(Assistant Professor Pattarasinee Bhattarakosol, Ph.D.)

.....Thesis Advisor
(Associate Professor Nagul Cooharajanane, Ph.D.)

.....External Examiner
(Suporn Pongnumkul, Ph.D.)



ภคติกา อัครศาสระกุล : ปัจจัยที่มีอิทธิพลต่อความตั้งใจในการซื้อสินค้าชุมชนท้องถิ่นบนเว็บไซต์อีคอมเมิร์ซ: กรณีสินค้าหนึ่งตำบลหนึ่งผลิตภัณฑ์ (OTOP) ในประเทศไทย (FACTORS INFLUENCING INTENTION TO PURCHASE LOCAL COMMUNITY PRODUCT ON E-COMMERCE WEBSITE: CASE OF ONE TAMBON ONE PRODUCT (OTOP) IN THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร. นกุล คูหะโรจนานนท์, 104 หน้า.

ตามกรอบนโยบายของประเทศไทยที่มีการขยายตลาดและสร้างโอกาสในการดำเนินธุรกิจโดยใช้เทคโนโลยีสารสนเทศ (ไอซีที) และพาณิชย์อิเล็กทรอนิกส์ (อีคอมเมิร์ซ) เพื่อสนับสนุนชุมชนในชนบท อย่างไรก็ตามชุมชนเหล่านี้ส่วนใหญ่ไม่มีเว็บไซต์ของตนเองในการขายผลิตภัณฑ์ท้องถิ่น พวกเขาต้องพึ่งพาเว็บฝากขายเพื่อจำหน่ายผลิตภัณฑ์ท้องถิ่นของตนเอง ดังนั้นการมีเว็บไซต์ทางการของชุมชนและการใช้งานอีคอมเมิร์ซ จะทำให้ได้รับความสนใจและเป็นประโยชน์ต่อชุมชนมากขึ้น ดังนั้นในการศึกษานี้จึงต้องการศึกษาถึงปัจจัยที่มีอิทธิพลต่อความต้องการในการซื้อสินค้าหนึ่งตำบลหนึ่งผลิตภัณฑ์ (โอทอป) ของลูกค้า ซึ่งมีแนวคิดมาจากหนึ่งหมู่บ้านหนึ่งผลิตภัณฑ์ (โอวอป) ในประเทศญี่ปุ่น ผ่านการซื้อขายจากแหล่งช้อปปิ้งบนอินเทอร์เน็ตระหว่างเว็บฝากขายและเว็บไซต์ทางการ ปัจจัยต่าง ๆ เช่นการรับรู้ความสะดวกในการใช้งาน ความน่าเชื่อถือของเว็บไซต์ ความน่าเชื่อถือของผลิตภัณฑ์ และอิทธิพลทางสังคมที่มีผลต่อความต้องการซื้อของลูกค้าได้ถูกกล่าวถึงและวิเคราะห์ เก็บรวบรวมข้อมูลโดยวิธีการสุ่มตัวอย่างผู้เข้าร่วมการอบรม ซึ่งเป็นบุคคลจากพื้นที่ชนบทแต่ละแห่งในภาคตะวันออกเฉียงเหนือของประเทศไทย และมีความสนใจในผลิตภัณฑ์โอทอป การทำความเข้าใจปัจจัยต่าง ๆ ที่มีอิทธิพลต่อการซื้อสินค้าออนไลน์จะช่วยให้ผู้คนในชนบทมีแผนที่จะสร้างเว็บไซต์ทางการเพื่อจำหน่ายสินค้าโอทอป จากนั้นทดลองกับกลุ่มตัวอย่างโดยใช้เครื่องตรวจจับเพื่อศึกษาพฤติกรรมและความสนใจในการมอง สังเกต และใช้งานหน้าเว็บไซต์ ซึ่งผลที่ได้ไม่สอดคล้องกับผลทางสถิติ ผู้วิจัยจึงจัดทำสนทนากลุ่มกับกลุ่มตัวอย่างเดิมจำนวนหนึ่งเปรียบเทียบกับอีกกลุ่มตัวอย่างหนึ่งที่มีช่วงอายุคนละยุคสมัย พบว่าผลที่ได้จากทั้งสองกลุ่มมีความคิดเห็นไปในทิศทางเดียวกันและสอดคล้องกับผลการวิเคราะห์ทางสถิติ.

ภาควิชา	คณิตศาสตร์และวิทยาการ	ลายมือชื่อนิสิต
	คอมพิวเตอร์	ลายมือชื่อ อ.ที่ปรึกษาหลัก
สาขาวิชา	วิทยาการคอมพิวเตอร์และเทคโนโลยี	
	สารสนเทศ	

ปีการศึกษา 2560

5872634923 : MAJOR COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

KEYWORDS: E-COMMERCE / ONE TAMBON ONE PRODUCT (OTOP) / ONE VILLAGE ONE PRODUCT (OVOP) / PURCHASING INTENTION / TECHNOLOGY ACCEPTANCE MODEL / RELIABILITY / SOCIAL INFLUENCE / PERCEIVED EASE OF USE / FOCUS GROUP

KRITTIKA AKASARAKUL: FACTORS INFLUENCING INTENTION TO PURCHASE LOCAL COMMUNITY PRODUCT ON E-COMMERCE WEBSITE: CASE OF ONE TAMBON ONE PRODUCT (OTOP) IN THAILAND. ADVISOR: ASSOC. PROF. NAGUL COOHAROJANANONE, Ph.D., 104 pp.

In Thailand, ICT and e-Commerce are using for supporting rural community people refer to Thailand policy framework which has the policy to expand the market and create opportunities in business. However, these communities mostly do not have their website to sell their products. They still have to rely on a web portal. Therefore, having the rural community official website and e-Commerce would expect to gain more attention and would be advantages to the community. Thus, in this research, we would like to study factors influencing customer's purchasing intention through internet shopping of One Tambon One Product (OTOP), derived from the concept of One Village One Product (OVOP) in Japan, between on web portal and web official. Several factors such as perceived ease of use, a reliability of the website, a reliability of the product and social influences that affect customer's purchasing intention were discussed and analyzed. We collected the data by using a simple sampling method to survey participants who are from each rural area in North Eastern of Thailand and having an interest in OTOP products. To understanding well, the factors which influence online purchasing would allow rural people the possibility of having a plan for making their official OTOP website. Then, we performed a user study on official OTOP website to use an eye tracking machine based on paperwork participant's background. The result was inconsistent with the previous statistical result which stated that the social influence has the most effect on purchasing intention. Then, we conducted a focus group on the same sample group to compare with another, a younger generation. We found both two groups had the same opinions and consistency to statistical result.

Department: Mathematics and Computer Student's Signature

Science

Advisor's Signature

Field of Study: Computer Science and
Information Technology

Academic Year: 2017

ACKNOWLEDGEMENTS

This thesis could not accomplish without the help and support from the faculty and staffs during the implementation. I am grateful for the following assistance and would like to thank all of those who made it possible for me to complete this thesis.

Firstly, I am very much obliged and grateful to my research advisor, Associate Professor Nagul Cooharajanone, Ph.D. for suggesting and helping me understand the process of research, checking and correcting the thesis.

Secondly, I would like to thank the faculty of Commerce and Accountancy for let me using eye tracking machine along some of this thesis process.

Thirdly, I would like to thank program chair, Assistant Professor Pattarasinee Bhattarakosol, Ph.D. and external examiner, Suporn Pongnumkul, Ph.D. for their valuable suggestions and comments for my thesis.

Fourthly, I would like to thank all participants who have participated in all section, questionnaires, eye tracking experiment, and focus group among giving helpful suggestions and opinions through thesis process.

Fifth, I'm most grateful to my parents who have always supported and encouraged me in everything I do.

Finally, I am very thankful to everyone who has mentioned here and not mentioned above to helping and advising me for this thesis successful.

CONTENTS

	Page
THAI ABSTRACT.....	iv
ENGLISH ABSTRACT.....	v
ACKNOWLEDGEMENTS	vi
CONTENTS.....	vii
CONTENT OF TABLES	x
CONTENT OF FIGURES.....	xi
CONTENT OF ABBREVIATIONS	xx
Chapter 1. INTRODUCTION.....	1
1.1 Background and Importance.....	1
1.2 Objectives	4
1.3 Scope of thesis and constraints	4
1.4 Expected Outcome	5
1.5 Thesis structure	5
Chapter 2. BACKGROUND.....	6
2.1 Overview of the Technology Acceptance Model (TAM)	6
2.2 Principal of Eye Tracking Technique and Presentation	7
2.2.1 Fixation.....	7
2.2.2 Saccades.....	8
2.2.3 The gaze	8
2.2.4 Scan path	8
2.2.5 Blink rate and Pupil size	8
2.3 Reliability, Perceived Ease of Use, and Social Influence.....	9

	Page
2.3.1 Reliability	9
2.3.2 Perceived Ease of Use.....	10
2.3.3 Social Influence	10
Chapter 3. METHODOLOGY AND DATA ANALYSIS	12
3.1 Demographic Information	12
3.2 Reliability Analysis	14
3.3 Factor Analysis.....	16
3.4 Regression Analysis.....	18
3.5 Eye Tracking equipment.....	19
3.6 Focus Group.....	32
Chapter 4. DISCUSSION AND CONCLUSION	36
REFERENCES.....	39
APPENDIX	42
Appendix A1: Survey Form (TH version).....	43
Appendix A2: Survey Form (EN - translated version)	50
Appendix B: Data Tables of Reliability Statistical Analysis.....	58
Appendix C1: The second journey from the second participant who had been sampling from all 24 participants and had played an OTOP official website	61
Appendix C2: The third journey from the third participant who had been sampling from all 24 participants and had played an OTOP official website.	74
Appendix D: A sample of Heatmap on social media of Lopburi official website	82
Appendix E: A sample of an existing and popular e-Commerce website in Thailand	94

Appendix F: Proposed rough ideas about some features that would be a challenge to the further work for better design on official OTOP website in Thailand	102
VITA	104



CONTENT OF TABLES

	Page
Table 1. The percentage table of demographic information of participants	13
Table 2. Kaiser-Meyer-Olkin's value from reliability analysis.....	16
Table 3. Principal component analysis (Rotated component matrix).....	17
Table 4. Reliability Statistical Analysis Data	58



CONTENT OF FIGURES

	Page
Figure 1. A sample of an OTOP official website (www.lopburi.org/otop-lopburi)	3
Figure 2. A sample of a web portal (www.Lnwshop.com).....	3
Figure 3. A sample of a web portal (www.ThaiTambon.com).....	4
Figure 4. Theory of Reasoned Action (TRA) models with removed attitude variable	7
Figure 5. A sample of Heatmap presentation (Breeze 2014)	9
Figure 6. Technology Acceptance Model with influencing factors, such as Reliability of Product, Reliability of Website, Perceived Ease of Use, and Social Influence, on Intention to Buy of customers.....	11
Figure 7. Multiple regression analysis with R-square and beta coefficients	19
Figure 8. The homepage of Lopburi’s official OTOP website	20
Figure 9. Product information and illustrations.....	21
Figure 10. Customer’s shopping basket preview.....	21
Figure 11. Summary ordering and payment method.....	22
Figure 12. First sampling journey from one of all participants who playing on OTOP official website (part 1)	23
Figure 13. First sampling journey from one of all participants who playing on OTOP official website (part 2 – by clicking on pink arrow button from part 1)	23
Figure 14. First sampling journey from one of all participants who playing on OTOP official website (part 3 – by scrolling down part 2).....	24
Figure 15. First sampling journey from one of all participants who playing on OTOP official website (part 4 – by scrolled down part 3).....	24

Figure 16. First sampling journey from one of all participants who playing on OTOP official website (part 5 – by scrolling down part 4).....	25
Figure 17. First sampling journey from one of all participants who playing on OTOP official website (part 6 – by scrolling down part 5).....	25
Figure 18. First sampling journey from one of all participants who playing on OTOP official website (part 7 – by going back to the top).....	26
Figure 19. First sampling journey from one of all participants who playing on OTOP official website (part 8 – by clicking on “OTOP ลพบุรี” horizontal navigation bar).....	26
Figure 20. First sampling journey from one of all participants who playing on OTOP official website (part 9 – by scrolling down part 8).....	27
Figure 21. First sampling journey from one of all participants who playing on OTOP official website (part 10 – could click on red circle 1 and 2 to see another product of handicraft).....	27
Figure 22. First sampling journey from one of all participants who playing on OTOP official website (part 11 – could see more information about the product by clicking on the red bar under the picture in part 10).....	28
Figure 23. First sampling journey from one of all participants who playing on OTOP official website (part 12 – could zoom in and out of product picture by clicking and hold dragging around the picture).....	28
Figure 24. First sampling journey from one of all participants who playing on OTOP official website (part 13 – see previous or next product by clicking on navigator in the red box).....	29
Figure 25. First sampling journey from one of all participants who playing on OTOP official website (part 14 – checking summary ordered on shopping cart by clicking on brown rectangle box in part 13).....	29
Figure 26. First sampling journey from one of all participants who playing on OTOP official website (part 15 – participant go back to shop more).....	30

Figure 27. First sampling journey from one of all participants who playing on OTOP official website (part 16 – participant survey on the website again).....	30
Figure 28. First sampling journey from one of all participants who playing on OTOP official website (part 17 – participant done the task).....	31
Figure 29. A small group of people discussing topics defined by the researcher (https://www.usability.gov/how-to-and-tools/methods/focus-groups.html).....	32
Figure 30. A sample of members' opinions of the old-generation group.....	34
Figure 31. A sample of members' opinions of the new-generation group	35
Figure 32. Second sampling journey from one of all participants who playing on OTOP official website (part 1).....	61
Figure 33. Second sampling journey from one of all participants who playing on OTOP official website (part 2 – by scrolling down the page from part 1).....	61
Figure 34. Second sampling journey from one of all participants who playing on OTOP official website (part 3 – by scrolling down the page from part 2).....	62
Figure 35. Second sampling journey from one of all participants who playing on OTOP official website (part 4 – by scrolling down the page from part 3).....	62
Figure 36. Second sampling journey from one of all participants who playing on OTOP official website (part 5 – by scrolling down the page from part 4).....	63
Figure 37. Second sampling journey from one of all participants who playing on OTOP official website (part 6 – by scrolling down the page from part 5).....	63
Figure 38. Second sampling journey from one of all participants who playing on OTOP official website (part 7 – by scrolling down the page from part 6).....	64
Figure 39. Second sampling journey from one of all participants who playing on OTOP official website (part 8 – by scrolling down the page from part 7).....	64
Figure 40. Second sampling journey from one of all participants who playing on OTOP official website (part 9 – by scrolling down the page from part 8).....	65

Figure 41. Second sampling journey from one of all participants who playing on OTOP official website (part 10 – by clicking “OTOP ลพบุรี” in the top navigation bar).....	65
Figure 42. Second sampling journey from one of all participants who playing on OTOP official website (part 11 – by scrolling down the page from part 10)	66
Figure 43. Second sampling journey from one of all participants who playing on OTOP official website (part 12 – by scrolling down the page from part 11)	66
Figure 44. Second sampling journey from one of all participants who playing on OTOP official website (part 13 – by scrolling down the page from part 12)	67
Figure 45. Second sampling journey from one of all participants who playing on OTOP official website (part 14 – by scrolling down the page from part 13)	67
Figure 46. Second sampling journey from one of all participants who playing on OTOP official website (part 15 – by clicking on the product to see more information from part 14)	68
Figure 47. Second sampling journey from one of all participants who playing on OTOP official website (part 16 – by clicking and hold dragging to zoom in and zoom out the product picture).....	69
Figure 48. Second sampling journey from one of all participants who playing on OTOP official website (part 17 – by scrolling down the page from part 16)	69
Figure 49. Second sampling journey from one of all participants who playing on OTOP official website (part 18 – participant go back to shopping for more products).....	70
Figure 50. Second sampling journey from one of all participants who playing on OTOP official website (part 19 – participant selected product and zoom in to see the detail of product picture).....	71
Figure 51. Second sampling journey from one of all participants who playing on OTOP official website (part 20 – user checked product list in shopping cart).....	71

Figure 52. Second sampling journey from one of all participants who playing on OTOP official website (part 21 – user go back and continue shopping).....	72
Figure 53. Second sampling journey from one of all participants who playing on OTOP official website (part 22 – user checked product list in shopping cart again).....	72
Figure 54. Second sampling journey from one of all participants who playing on OTOP official website (part 23 – user did the task).....	73
Figure 55. Third sampling journey from one of all participants who playing on OTOP official website (part 1).....	74
Figure 56. Third sampling journey from one of all participants who playing on OTOP official website (part 2 – user clicking on the arrow button in red circle).....	74
Figure 57. Third sampling journey from one of all participants who playing on OTOP official website (part 3 – user observed the shopping cart).....	75
Figure 58. Third sampling journey from one of all participants who playing on OTOP official website (part 4 – user close the shopping cart and scroll down the page from part 2).....	75
Figure 59. Third sampling journey from one of all participants who playing on OTOP official website (part 5 – user scroll down the page from part 4).....	76
Figure 60. Third sampling journey from one of all participants who playing on OTOP official website (part 6 – user scroll down the page from part 5).....	76
Figure 61. Third sampling journey from one of all participants who playing on OTOP official website (part 7 – user scroll down the page from part 6).....	77
Figure 62. Third sampling journey from one of all participants who playing on OTOP official website (part 8 – user scroll down the page from part 7).....	77
Figure 63. Third sampling journey from one of all participants who playing on OTOP official website (part 9 – user scroll down the page from part 8).....	78

Figure 64. Third sampling journey from one of all participants who playing on OTOP official website (part 10 – user scroll down the page from part 9).....	78
Figure 65. Third sampling journey from one of all participants who playing on OTOP official website (part 11 – user scroll up the page from part 10).....	79
Figure 66. Third sampling journey from one of all participants who playing on OTOP official website (part 12 – user chose the product and click on product picture to see more information).....	79
Figure 67. Third sampling journey from one of all participants who playing on OTOP official website (part 13 – user scroll down the page from part 12)	80
Figure 68. Third sampling journey from one of all participants who playing on OTOP official website (part 14 – user checked on the shopping cart after they put the product into the cart).....	80
Figure 69. Third sampling journey from one of all participants who playing on OTOP official website (part 15 – user did the task).....	81
Figure 70. Heatmap on social media from first participant’s eye movement tracking.....	82
Figure 71. Heatmap on social media from second participant’s eye movement tracking.....	82
Figure 72. Heatmap on social media from third participant’s eye movement tracking.....	83
Figure 73. Heatmap on social media from fourth participant’s eye movement tracking.....	83
Figure 74. Heatmap on social media from fifth participant’s eye movement tracking.....	84
Figure 75. Heatmap on social media from sixth participant’s eye movement tracking.....	84

Figure 76. Heatmap on social media from seventh participant's eye movement tracking.....	85
Figure 77. Heatmap on social media from eighth participant's eye movement tracking.....	85
Figure 78. Heatmap on social media from ninth participant's eye movement tracking.....	86
Figure 79. Heatmap on social media from tenth participant's eye movement tracking.....	86
Figure 80. Heatmap on social media from eleventh participant's eye movement tracking.....	87
Figure 81. Heatmap on social media from twelfth participant's eye movement tracking.....	87
Figure 82. Heatmap on social media from thirteenth participant's eye movement tracking.....	88
Figure 83. Heatmap on social media from fourteenth participant's eye movement tracking.....	88
Figure 84. Heatmap on social media from fifteenth participant's eye movement tracking.....	89
Figure 85. Heatmap on social media from sixteenth participant's eye movement tracking.....	89
Figure 86. Heatmap on social media from seventeenth participant's eye movement tracking.....	90
Figure 87. Heatmap on social media from eighteenth participant's eye movement tracking.....	90
Figure 88. Heatmap on social media from nineteenth participant's eye movement tracking.....	91

Figure 89. Heatmap on social media from twentieth participant’s eye movement tracking.....	91
Figure 90. Heatmap on social media from twenty-first participant’s eye movement tracking.....	92
Figure 91. Heatmap on social media from twenty-second participant’s eye movement tracking.....	92
Figure 92. Heatmap on social media from twenty-third participant’s eye movement tracking.....	93
Figure 93. Heatmap on social media from twenty-fourth participant’s eye movement tracking.....	93
Figure 94. An overall product display for ordering from AliExpress.com website with shows some basic information and rating. (Bags category sample).....	94
Figure 95. An AliExpress.com website show product information, photos, prices, product option, shipping details, and ordering details after choosing the product	94
Figure 96. Feedback section from customer’s using experiences on the product (AliExpress.com website).....	95
Figure 97. Customer reviews or comments showing in the feedback section of AliExpress.com website.....	95
Figure 98. An overall product display for ordering from Lazada.com website with shows some basic information and rating. (Bags category sample)	96
Figure 99. A Lazada.com website show product information, photos, prices, product option, shipping details, ordering details, and also seller details after choosing the product.....	96
Figure 100. Ratings and Reviews section from customer usage experiences of the product from Lazada.com website.....	97

Figure 101. A sample of product reviews from each customer of Lazada.com website.....	97
Figure 102. Questions about the product section of Lazada.com which let users ask about what they have suspect on the product.....	98
Figure 103. An overall product display for ordering from Shopee.com website with shows some basic information and rating. (Bags category sample)	98
Figure 104. Shopee.com website show product information, photos, prices, a product option, and ordering details after choosing the product.....	99
Figure 105. Product reviews/comments and rating score from each customer of Shopee.com website.....	99
Figure 106. An overall product display for ordering from Weloveshopping.com website with shows some basic information. (Bags category sample)	100
Figure 107. Weloveshopping.com website show product information, photos, prices, a product option, product status, shipping details, and ordering details after choosing the product	100
Figure 108. Rating score of customer satisfaction in each aspect of the product on Weloveshopping.com website	101
Figure 109. Summarize detail of all customer satisfaction of product on Weloveshopping.com website	101
Figure 110. A Rough idea of putting videos or images movement to show the production processes on sample website (Lopburi.org).....	102
Figure 111. A Rough idea of moving a location of a social element from the bottom left and also having a recommended review that is a real-time review of sample website (Lopburi.org)	103

CONTENT OF ABBREVIATIONS

e-Commerce	Electronic Commerce
ICT	Information and Communication Technology
IT	Information Technology
KMO value	Kaiser-Meyer-Olkin value
MRA	Multiple Regression Analysis
OTOP	One Tambon One Product
OVOP	One Village One Product
PC	Principle Component
PEU	Perceived Ease of Use
RP	Reliability of Product
RW	Reliability of Website
SI	Social Influence
SMEs	Small-to-Medium Enterprises
TAM	Technology Acceptance Model
TICTPF (2011 – 2020)	Thailand Information and Communication Technology Policy Framework (2011 – 2020)
TRA	Theory of Reasoned Action
yrs.	years

Chapter 1.

INTRODUCTION

In this chapter, the first section 1.1 has described the interesting problems and motivation. Section 1.2 stated the objectives then, section 1.3 discussed the scope and constraints of the thesis, following by the expected outcomes in section 1.4.

1.1 Background and Importance

Nowadays, most Thai people know about the "OTOP" project and what this project is. The OTOP project is abbreviating from "One Tambon One Product." The concept of the project is to help to promote rural community goods, like silk and cotton garments, traditional handicrafts, ceramics or porcelains, accessories, food and household appliances from different districts which had the folk handicrafts gain a brighter future in the market share. The OTOP project was set up to the wide-open market and made an income to people in each community for improving their quality of lives. Thus, the main objective of the project is to create marketing's management with a strong sense among people and made the self-reliance lasting that would take a rooted deeply in the social structure. The word "product" in this research has meaning cover activities and services. Sometimes a product comes from the cooperation among a few Tambons; this means OTOP could have more than one category. Thus, the project covers most of the traditional products.

In the OTOP project development that several units of government are playing an important role. Thailand Information and Communication Technology Policy Framework (2011-2020) or TICTPF (Center, Agency et al. 2011), it was one of the policy frameworks which created the opportunities and expanded a market in business in term of entrepreneurs by promoting and developing the use of e-Commerce and ICT. From those supports refer to the social enterprises, SMEs, agricultural cooperatives, and enterprise networks, it is also improved services, the business process, trades, and market access, in perspective of improving the competitiveness and creating a network.

One Tambon One Product (OTOP) was a stimulus program for local entrepreneur and has inspiration from Japan's successful project (Natsuda, Igusa et al. 2012), One Village One Product (OVOP) program. A successful process such as Policy of regional development has motivated and given the strength to local business by helping the economic growth for people in the community and developing the local production by giving the opportunity to distribute their products to the global. A village community also encourages the OTOP project by improving the quality of community products and their marketing (Denpaiboon and Amatasawatdee 2012). To upgrading the business level of the local product, it should bring out the folk intelligence which the local artisans have provided by the government with both domestic and international of marketing management skills and advanced product knowledge that have been arranged to set up an intensive course by a specialist for them (Schumann 2016). In the long run, the government has supported in other forms for each group rather than subsidizing their product which tends to decrease the self-reliance of the community. For example, the Internet system usage and the chain stores set up are encouraged for extending their channels of distribution and market shares.

Therefore, for the entrepreneurs who are going to run the e-Commerce business which is appropriate to them that having only one webpage. They can trade every time for a day or trade 24 hours unstopable every day, and it also seems like their stores are located everywhere in the world, which means the entrepreneur could reach directly to the customers and giving customers a suggestion to fix the problems. However, in Thailand, not many districts are having their own official OTOP website, like Lopburi province as in Figure 1, on the e-Commerce sales channel. While many districts still using the web portal which is easy for maintenance and could promote, advertised and distributed their goods such as Lnwshop.com and ThaiTambon.com as shown in Figure 2 – 3, respectively, but it cannot manage due to some constraints like having a limited distribution of contents or inflexible format. For instance, showing information or detail, some of the web portals could display only pictures while some of them could be displayed a few pictures and price information to sell the products. Thus, it would not make a 100 percent guaranteed for consumers that a product is the

real OTOP. In addition to the web portal might need to be paid to the web service provider before the entrepreneur could promote their products. In consequence, it would be benefits to make their official website and create their market channel for people in each community from different districts which this thesis purpose to understand and to research about factors influence on purchasing OTOP products on the official website via e-Commerce.



Figure 1. A sample of an OTOP official website
(www.lopburi.org/otop-lopburi)

Figure 2. A sample of a web portal
(www.Lnwshop.com)

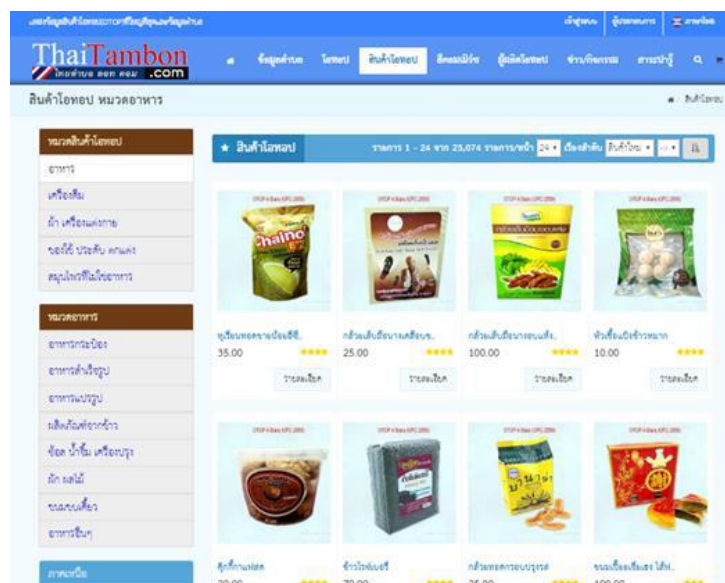


Figure 3. A sample of a web portal

(www.ThaiTambon.com)

1.2 Objectives

To study, analyze and understand about the influencing factors, such as perceived ease of use, social influence, the reliability of the product, and reliability of website which are an influence to customer's purchasing intention. It would allow the possibility of making rural people to create their own OTOP product's official website for each province. Moreover, to experiments with users by collecting data from the actual usage through the given website.

1.3 Scope of thesis and constraints

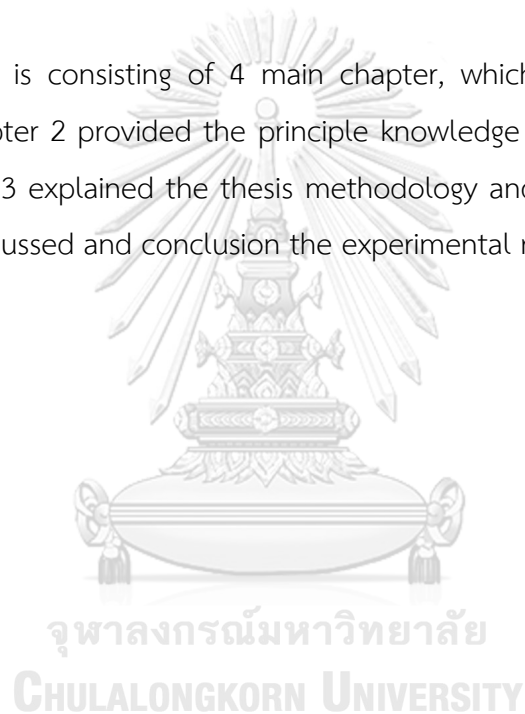
There are several assumptions to be considered, and the research problems can formulate as follow; What is the target group, how to design of questionnaires or survey form for interviewing participants and how many questions that appropriated, and what the statistical methodology are using for analyzing a data. Approaches to solving these problems, it will establish in the following chapter.

1.4 Expected Outcome

Findings on how each factor affects the customer's purchasing intention. Moreover, the result from an experiment using eye-tracking which come from the real usage of the customer on official OTOP website has also supported the statistical data analysis with supporting reasons collecting by focus group method. Also, the result from doing the focus group should also be consistency to both previous methods.

1.5 Thesis structure

This thesis is consisting of 4 main chapter, which chapter 1 provided the introduction. Chapter 2 provided the principle knowledge background and literature reviews. Chapter 3 explained the thesis methodology and analysis of the data and chapter 4 had discussed and conclusion the experimental results.



Chapter 2.

BACKGROUND

The intention to purchase a product defined as the possibility or probability of a customer to purchasing the products to understanding and explore the individual's performance of a certain behavior that user intended to determine and perform. In this chapter, section 2.1 has focused on information and related works about the Technology Acceptance Model which is the model to explain and predict the use of the system. For section 2.2, described the principle of eye tracking technique and its presentation. Followed by the factors that influence the purchasing intention included the reliability, perceived ease of use, and social influence, which explained as in section 2.3.

2.1 Overview of the Technology Acceptance Model (TAM)

Since the studied of human behavior take action, As (Davis, Bagozzi et al. 1989), the social psychology theory was the most used for studied human behavior as a basis to present the Theory of Reasoned Action (TRA) which explained toward behavior by the relationship between attitudes and beliefs. The changing of human behavior was a result of the unaltered faith and going to behave since before human doing an action; they always considered the reasons (Corbitt, Thanasankit et al. 2003).

The Technology Acceptance Model (TAM) was adapted and used for assessing the user's computer acceptance from the Theory of Reasoned Action (TRA), where is the intention to use was stated by measuring the behavioral intention to use, perceived usefulness, and perceived ease of use. It is showing the perceived usefulness influence the intention to use strongly while perceived ease of use only has a slight impact on the intention to use. Meanwhile, those are having on the intention to use; the attitude is partly mediate the perceived ease of use and perceived usefulness (Davis 1989). Hence, the attitude is not playing as much as possible to be determinant influencing the variables. Thus, the model has adapted and removed the attitude variable which shown in TRA model as Figure 4. The modified model represented a mediator who is

the intention that is influencing the relationship of those variables; perceived usefulness, perceived ease of use and usage behavior (Venkatesh and Davis 2000).

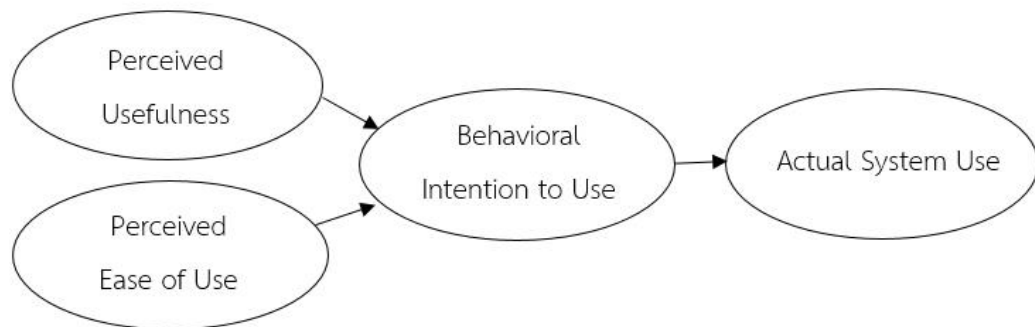


Figure 4. Theory of Reasoned Action (TRA) models with removed attitude variable

2.2 Principal of Eye Tracking Technique and Presentation

An eye tracking is a technique to measure and observe eyes' movement of each user which made an observer knowing the point that user is looking at (Poole and Ball). In general, user feedback is used to measure what is perceived by the process. It is a way that cannot accurately reflect the process of perception while making decisions about what to do with something. On the other hand, an eye tracking can be a more accurate monitoring tool that not only reveals the recognition process but also helps to find some important information (Yang and Lin 2014). The eye tracking technique recorded the movement of the users' eyes when they viewed on the screen by the eye tracker, which has the following techniques (Sharma and Dubey 2014);

2.2.1 Fixation

Fixation is a time when the eye has stopped in one area while reading the information. The more often fixation in that area, it can be said that the information read at the time was difficult to understand, or user is interested in it.

2.2.2 Saccades

There is the moment when the eyeball scanned without reading a data. The regressive saccade is a move of an eye back to the original way. It occurs when the user may encounter a difficult reading.

2.2.3 The gaze

The gaze occurs when an eyeball is looking at a specific position on the screen.

2.2.4 Scan path

It is a path to search for information.

2.2.5 Blink rate and Pupil size

Using to measure the transfer of information about a wider pupil size recognition process which indicates the level of effort. In the low blink rate, recognition process might have a high workload while the high blink rate might indicate about fatigue in the eyes.

The data from the eyes' movement monitoring will make an understanding which part of the user interface is most viewed and analyzed by processing the data. Although the results of numerical computations are beneficial to understand the behavior of shoppers in many cases, the resultant image would be more understandable than the numerical results. The measuring from eye tracking would make users understand clearly by presenting what the site shows to users. To visualize the eyes' movement had recorded in the form of a video to demonstrate the behavior along with the measurement. The combination of numerical results and visual behaviors will make it more effective in researching behavior. Several techniques used to present the behavior (Wong, Bartels et al. 2014) and heat maps were one of those techniques which used in this research. It is a visualization of behavioral information

which using the color plot to present the density of visual behavior which the model was derived from the gaze or fixation point of the user as displayed in Figure 5.



Figure 5. A sample of Heatmap presentation (Breeze 2014)

2.3 Reliability, Perceived Ease of Use, and Social Influence

This section provided the fundamental knowledge and basic concept of the variable which is an issue to the discussion in the next chapter with Reliability presented in section 2.3.1. Then, Perceived ease of use in section 2.3.2. Finally, Social Influence has drawn in section 2.3.3.

2.3.1 Reliability

Up to this moment, the concept had represented several marketing tools which is not only identified the product but trying to warrant the products' quality for the consumers. Thus, the label would be the major concept in the marketing field. By the way, to deal with this concept, it could be deal by a relatively few academic research works. According to the labeling which has been created by the public and para-public institutions that equally to the professional organizations. The label would have made reliable certificate of product's quality. The labels aim to provide high quality with the

guarantee of authorities to products for consumers (Wee, Ariff et al. 2014). Creating the label refers to the setting of the verification system to indeed ensure that the product complies with the defined criteria.

2.3.2 Perceived Ease of Use

Perceived Ease of Use, it measures user assessments of ease of use and ease of learning. So, it deals with the motivation of the user that based on the assessment of the internal aspect of using the IT, for example, its interface and the process involved in using it (D Gefen October, 2000). To referring perceived ease of use is the effort which made by individuals according to (Davis 1989), the system that a user found effortless could be defined by a degree which expressed the boundary of perceiving an innovation is difficult to understand or use. At best, ease of use could be translated as the complexity degree and scoping perceived effortless of the internet.

2.3.3 Social Influence

Social influence is one way from several social aspects that impact the product purchasing intentions of the consumers. Refer to (Kim and Srivastava (2007 that has to focus on captured data of the social influence from e-Commerce platforms and described e-Commerce sites using this factor has effected on consumer's decision making. Related to product evaluations (Cohen and Golden 1972, Burnkrant and Cousineau 1975), the influence of informative social effect also supported by some studies on decision making. As referred by (Lee, Shi et al. 2011), apparently proving the informative social effect that has a positive impact on the online-purchasing decisions. Also, (Rashotte 2007) described social influence was about the feeling changing, thoughts, attitudes, and behaviors, even intentional or unintentional that influencing by other people. Due to the interaction

or relationship between people which they have known each other for instance peers and parents which consumers would influence by those people or some media to purchasing products.

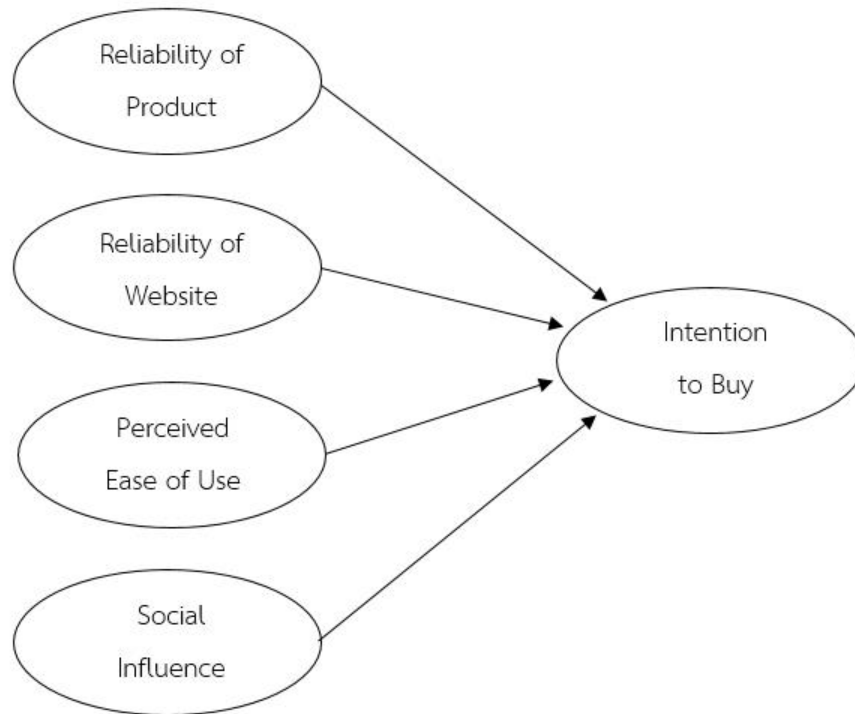


Figure 6. Technology Acceptance Model with influencing factors, such as Reliability of Product, Reliability of Website, Perceived Ease of Use, and Social Influence, on Intention to Buy of customers

Chapter 3.

METHODOLOGY AND DATA ANALYSIS

This chapter, the word “official website” was a website that is directly managing by the owner. The participant’s information was collected and analyzed from the survey form to accomplish the hypotheses which described in section 3.1. Then follow by the process of the research with the proposed method, such as Reliability Analysis, Factor Analysis, and Regression Analysis in section 3.2, 3.3, and 3.4 respectively. In section 3.5, the eye tracking experimental was taken by eye tracking machine that giving users used an official OTOP website and observing their actual behavior. Moreover, then focus group technique was used to support and given the reasons to explain the result in section 3.6.

3.1 Demographic Information

After having an interesting problem of why the user is choosing web portal rather than an official. The first phase of collecting the data started with the sample of 62 entrepreneurs and customers who interested in this field and come to doing a workshop and living in North Eastern of Thailand to answer a questionnaire which designed in the form of paperwork about the purchasing intention of OTOP product via using community site. We began to design our questions by considering closed questions for each category. Then, asking and ascertaining for choices among numeric quantities and nominal categories (e.g., “The average time you use the internet an hour per day?”, “How long do you use the internet?”, “What are you involved in OTOP?”, “How often do you purchase products and services over the internet on your mobile?”, “The highest amount you have ever purchased over the internet?”, Etc) as in survey form of appendix A2. Next, we have rating scales for each category which consists of the reliability of the product, the reliability of the website, perceived ease of use, and social influence (Krosnick 1999). After that, we collected those data before passing to the second phase of the research that considered both of the knowledge of Internet usage and an Internet manipulation.

Table 1. The percentage table of demographic information of participants

Attributes	Percentage of proportion (Number of population = 62)
Gender	
Female	50.00
Male	50.00
Age	
21 - 30 yrs.	37.10
31 - 40 yrs.	38.71
41 - 50 yrs.	19.36
51 - 60 yrs.	3.23
Relationship	
Customer	88.71
Entrepreneur	9.68
Type of Purchasing Products	
Food	19.35
Clothes	56.45
Accessories	22.58
House Decoration	14.52
Others	14.52
Purposed of Using the Internet	
Communication	95.16
Purchasing	62.90
Following News	90.32
Researches	79.03
Others	80.65

Using Internet Experience		
	1 - 2 yrs.	40.32
	3 - 4 yrs.	43.55
	5 - 6 yrs.	20.97
	≥ 6 yrs.	4.84
Buying online Experience		
	Yes	83.87
	No	14.52
Number of Buying Per month		
	1 - 2 times	69.35
	3 - 4 times	3.23
	≥ five times	8.06

From the participant's data table as shown in Table 1, male and female were both 50.00 percent. The age segment's partition for 21 to 30, 31 to 40, 41 to 50, and 51 to 60 were 37.10, 38.71, 19.36, and 3.23 respectively. Moreover, a large partition of the age segment is ranged from 31 to 40 which is 38.71 percent. Moreover, 88.71 percent of all participants were most customers. Meanwhile, 9.68 percent and the rest were an entrepreneur and not identified. Also, 56.45 percent of participants are buying costume product mostly more than other categories. The experience in using the Internet of almost half of participants have 3 to 4 years which can count to 43.55 percent. Furthermore, 69.35 percent of them are all ever purchasing a product at least one times per month via e-Commerce.

3.2 Reliability Analysis

Testing the internal consistency of the factors that have the reliability to each other is called reliability analysis. Referred to the product's reliability factor as displayed in Table 4 of appendix B, the survey found the mean score was highest at

4.2581 with a low standard deviation on the product's appearance which participants thought it had affected the purchasing. Moreover, the consistency between the high mean score and the low standard deviation shown that most of the participants also thought the updated website which always having up-to-date information and the web's reputation, a certification of the community site, would affect the purchasing decision. Furthermore, the result of the statistical analysis in perceived ease of use term shown the participants mostly do not think that they could take their knowledge to adapt and use to response their needs and understanding it because from their demographic information like age, which elder might be too old that made them remember worse than teenagers would. So that would be some explanations about consistency between high mean score and low standard deviation.

In usually (Brown 2002) explain three strategies for estimating reliability: (a) test-retest reliability (e.g., calculating a reliability estimate by administering a test on two occasions and calculating the correlation between the two sets of scores). (b) Equivalent (or parallel) forms reliability (e.g., calculating a reliability estimate by administering two forms of a test and calculating the correlation between the two sets of scores), and (c) internal consistency reliability (e.g., calculating a reliability estimate based on a single form of a test administered on a single occasion using one of the many available internal consistency equations). The internal consistency strategy is the easiest logistically because it does not require administering the test twice or having two forms of the test.

A Cronbach alpha estimate (often symbolized by the lower case Greek letter alpha) should be interpreted just like other internal consistency estimates, that is, it estimates the proportion of variance in the test scores that attributed to true score variance. Put more simply, Cronbach alpha is used to estimate the proportion of variance that is systematic or consistent in a set of test scores. It can range from 0.00 (if no variance is consistent) to 1.00 (if all variance is consistent) with all values between 0.00 and 1.00 also being possible. For example, if the Cronbach alpha for a set of scores turns out to be 0.90 that can interpret as the meaning of the test is 90 percent reliable, and by extension that it is 10 percent unreliable.

In this section has calculated a Cronbach alpha that conducts to measure the inter-reliability on most variables which is another name for coefficient alpha reliability estimate. It was one of the most commonly reported reliability estimates in the language testing literature. The scores are range from 0.964 to 0.969 as shown in Appendix B, which is more than 0.70 the minimum acceptable level (Lance, Butts et al. 2006). Meanwhile, in this analysis, the items or questions would be deleted if they were not significant to fulfill the highest reliability of the measurement.

3.3 Factor Analysis

In this phase, a Kaiser-Meyer-Olkin (KMO) values were used to measure the appropriateness of the data. In the sufficiency sampling of KMO measure has calculated as an initial statistical analysis as shown in Table 2, before passing to the factor analysis. It is usually displayed relative values by KMO coefficient between 0 and 1, it would be unnecessary if the value does not have correlation or the value has approaches 0. On the other hand, as shown in Table 2, the KMO value is closer to 1 which represented that the factor analysis was supported and related by these constructs. In common, it would be considered that factor analysis is suitable for data when the KMO value is greater than 0.7 (Sukati, Hamid et al. 2012).

Table 2. Kaiser-Meyer-Olkin's value from reliability analysis

Variables	Kaiser-Meyer-Olkin's value
Reliability of Product	0.893
Reliability of Website	0.885
Perceived Ease of Use	0.793
Social Influence	0.728

Table 3. Principal component analysis (Rotated component matrix)

	Components*			
	1	2	3	4
RP1		0.694		
RP2		0.749		
RP3		0.721		
RP4		0.636		
RW1	0.736			
RW2	0.719			
RW3	0.686			
RW4	0.752			
RW5	0.735			
PEU1				0.741
PEU2				0.589
PEU3				0.856
SI1			0.624	
SI2			0.814	
SI3			0.803	

*Rotation converged in 8 iterations.

From calculated values shown in Table 3, they consisted of 3 steps. First, using correlation matrix to verify and considered the relationship among each variable. Second, extracting the factor, and thirdly, factor rotation. In this analysis, the Principal Component (PC) technique are used to extract factors for explaining variance as much information as possible by using a few questions. After doing a factor analysis, the questions have extracted by the Principal Component (PC) extraction technique and varimax rotation method in which the extraction result has removed to 15 variables from 19 variables. It is also classifying into four groups of factors that the first component named reliability of community website (RW), the second named reliability of product (RP), the third named social influence (SI) and the fourth named perceived ease of use (PEU). All of 4 factors have been giving an intended dimension with reliability and consistency measurement and unnecessary to eliminate the items appearing.

3.4 Regression Analysis

Up to this process, factors that influence the intention to purchase an OTOP product from the official community site are such a reliability of product (RP), reliability of website (RW), social influence (SI), or perceived ease of use (PEU) are measuring by the multiple regression analysis which R-square and standardized path loadings has included. The multiple regression analysis (MRA) is a statistical tool that allows examining how multiple independent variables are related to a dependent variable. Once it has identified how those multiple variables relate to the dependent variable, so it can take information about all of the independent variables and use it to make much more powerful and accurate predictions about why things are the way they are (Higgins 2005).

The analysis results of the purchasing intention on OTOP official website was significant. For reliability of the product, the reliability of the website, perceived ease of use and social influence factors are affecting significant to the purchasing intention at $p < 0.01$ with the beta coefficient were 0.259, 0.376, 0.490, and 0.555 respectively as in Figure 7. It was 75.6 percent of the variance in the purchasing intention when

those four factors, the reliability of the product, the reliability of the website, perceived ease of use and social influence, were count altogether. Meanwhile, the result also shown that factor named social influence is having the most effect on purchasing intention of product on the official community site, come up with perceived ease of use, the reliability of website and reliability of the product in the order.

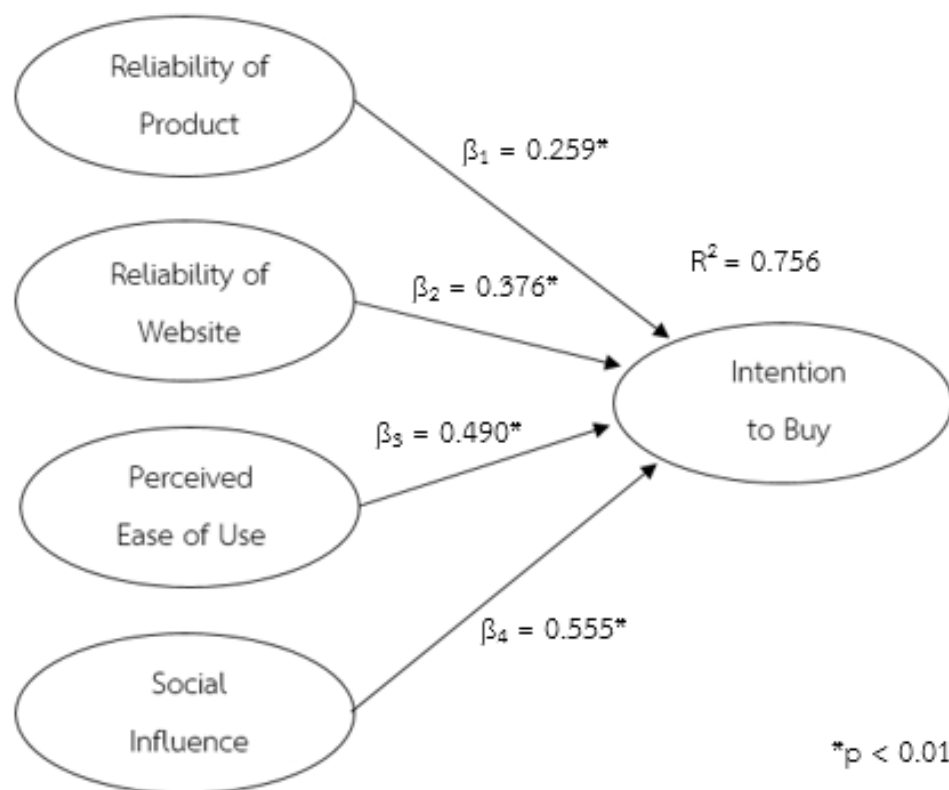


Figure 7. Multiple regression analysis with R-square and beta coefficients

3.5 Eye Tracking equipment

After data analysis process, the next step is to use an eye tracking equipment from an eye tracking company. This company called Tobii Group which its hardware and software are readily implemented with consumer's device such as a notebook or possibly even virtual reality or augmented reality products in the future. This technology is using user's eye as they usually would with an eye tracker that capture everywhere the user is looking at as we discussed in chapter 2.

As we know from chapter 1, the Lopburi province was one example of many provinces that have their own official OTOP website. Thus, we decided to choose lopburi.org for this experiment. There are many reasons to use a lopburi.org official website, which has the most similarity to those web portal (e.g., Lnwshop.com and ThaiTambon.com). For example, having updated information, a beautiful appearance, social media channel like Facebook, which has link connected to the Facebook page, and using e-Commerce to trade the product as overall appearances displayed in Figure 8 – 11 below. As being a guideline to know about the lopburi.org website, such as a homepage of Lopburi’s official OTOP website, product information, illustrations, customer’s shopping cart preview, and summary ordering and payment method. While the others official website that had found, they do not update any information, not fixed any displayed error problems on the website. They are just shown pictures and details of the product without any channels to trade for the customer.

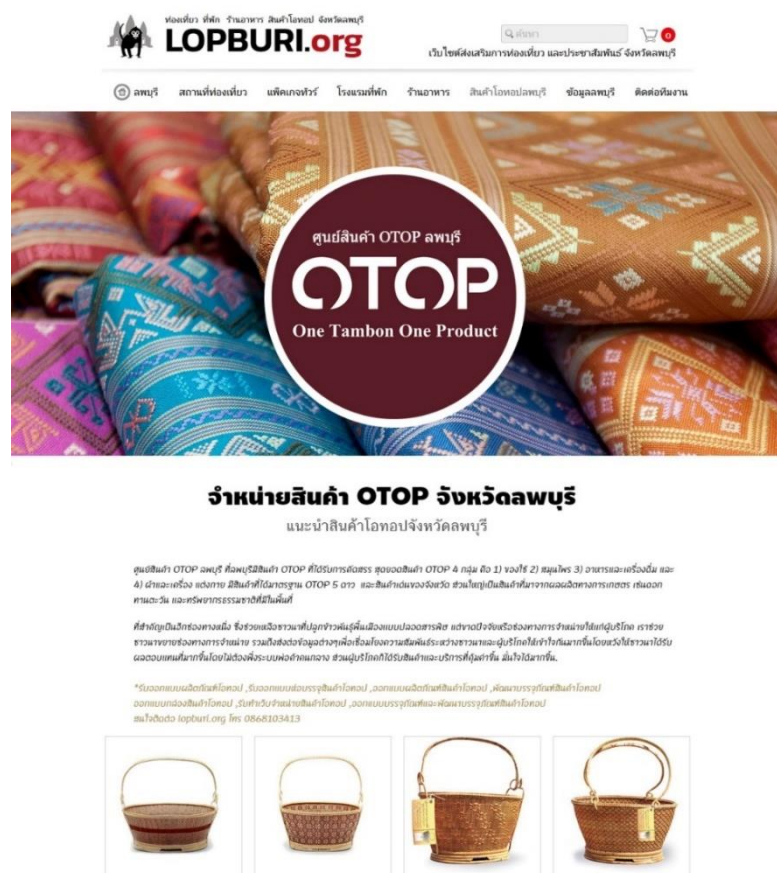


Figure 8. The homepage of Lopburi’s official OTOP website

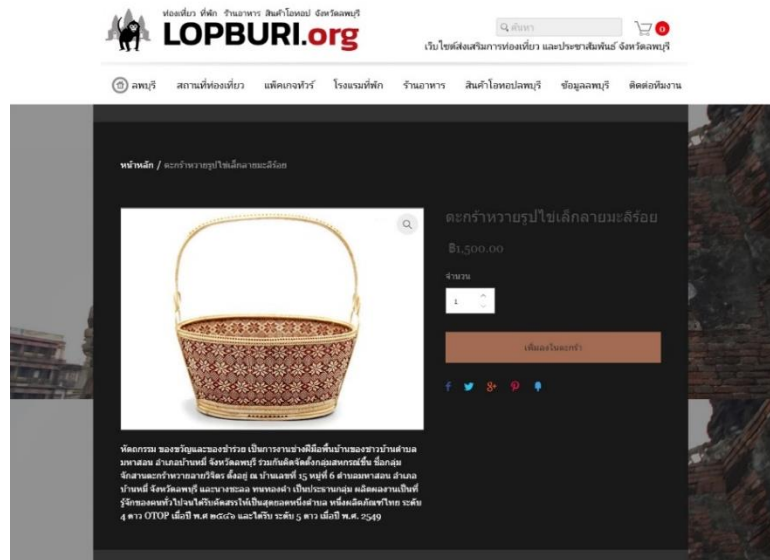


Figure 9. Product information and illustrations

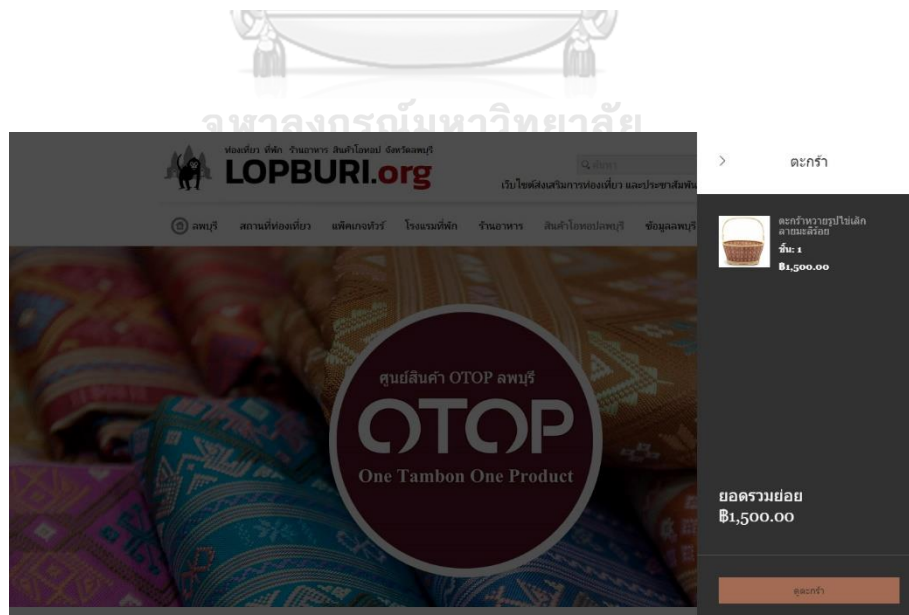


Figure 10. Customer's shopping basket preview

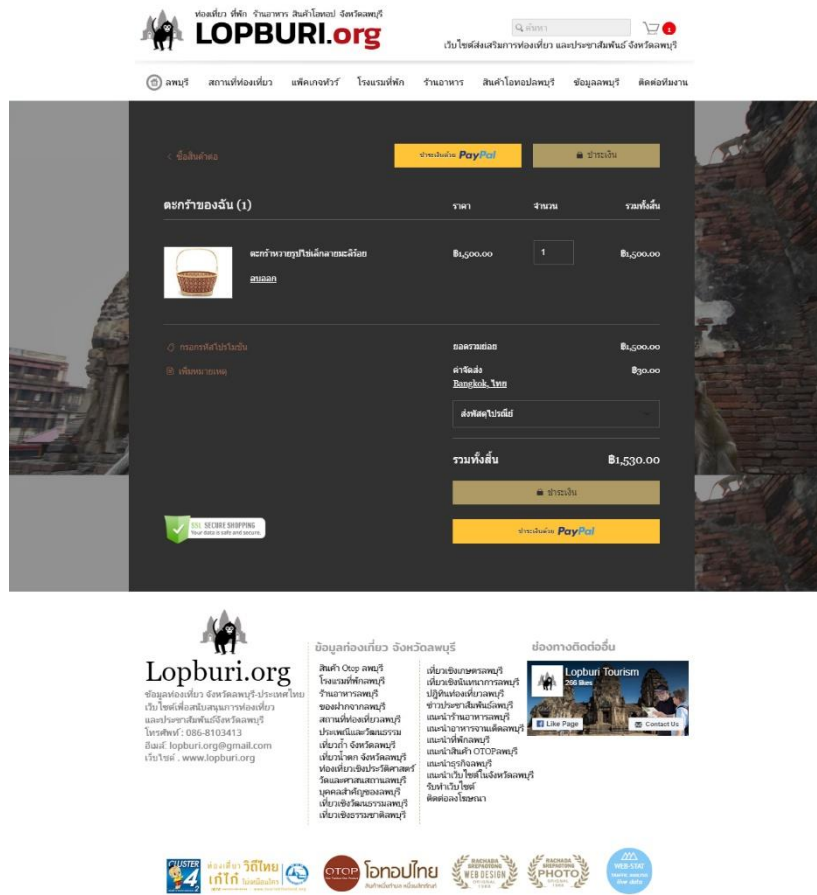


Figure 11. Summary ordering and payment method

Thus, doing an eye tracking is describing an eye movement of the user from the actual use of a website to study their behavior. For supporting the statistical effect that social is the most critical factor that influences user intention. So, we chose the Lopburi official website for experimenting the reasons that have been mentioned earlier for testing participants which amount of member depend on the conditions and timeliness of the limited use of the eye tracking machine. In this trial, 24 participants had included in the trial. The experiment was designed to allow users who had demographic information similarly to the participant in questionnaire part. We assigned each participant to complete tasks by assuming that they were a customer who never had seen this website before and wants to buy OTOP products from Lopburi province to give to their closed or acquaintance as gifts. So, we also assumed that they have found and chose this Lopburi.org website. Then, we gave participants to experiment

and played an official website freely by themselves for checking the website and making them familiar with it until they decided to purchase a product. The task would finish after the participant done the ordering and going to buy a product or before each participant had to fill the privacy information in the payment process. All tasks had a limited time with a maximum of 15 minutes per participant.



Figure 12. First sampling journey from one of all participants who playing on OTOP official website (part 1)

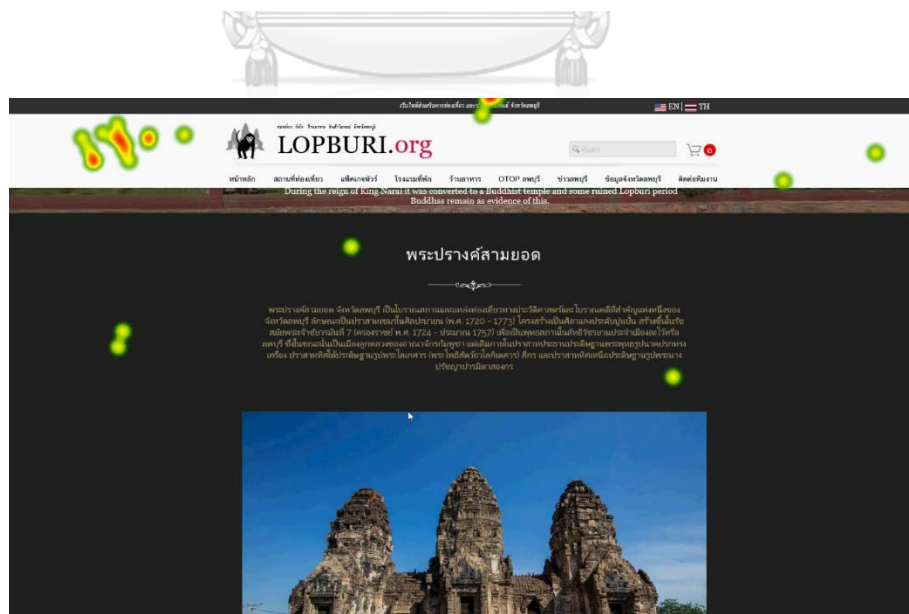


Figure 13. First sampling journey from one of all participants who playing on OTOP official website (part 2 – by clicking on pink arrow button from part 1)

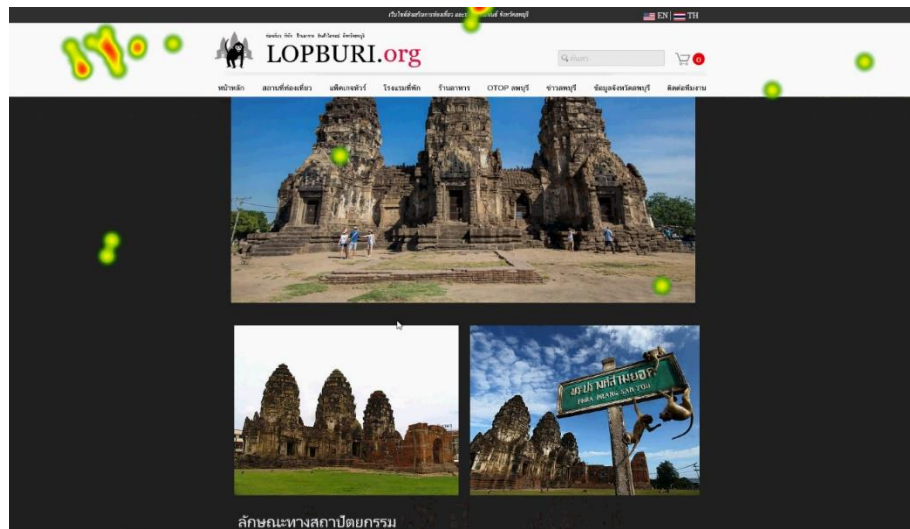


Figure 14. First sampling journey from one of all participants who playing on OTOP official website (part 3 – by scrolling down part 2)



Figure 15. First sampling journey from one of all participants who playing on OTOP official website (part 4 – by scrolled down part 3)



Figure 16. First sampling journey from one of all participants who playing on OTOP official website (part 5 – by scrolling down part 4)

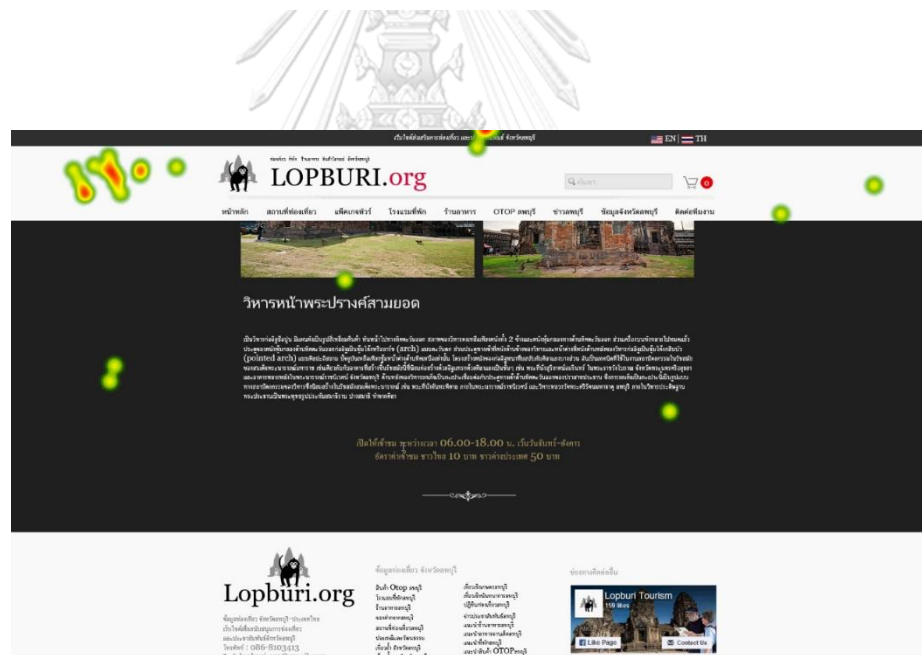


Figure 17. First sampling journey from one of all participants who playing on OTOP official website (part 6 – by scrolling down part 5)



Figure 18. First sampling journey from one of all participants who playing on OTOP official website (part 7 – by going back to the top)



Figure 19. First sampling journey from one of all participants who playing on OTOP official website (part 8 – by clicking on “OTOP ลพบุรี” horizontal navigation bar)



Figure 20. First sampling journey from one of all participants who playing on OTOP official website (part 9 – by scrolling down part 8)

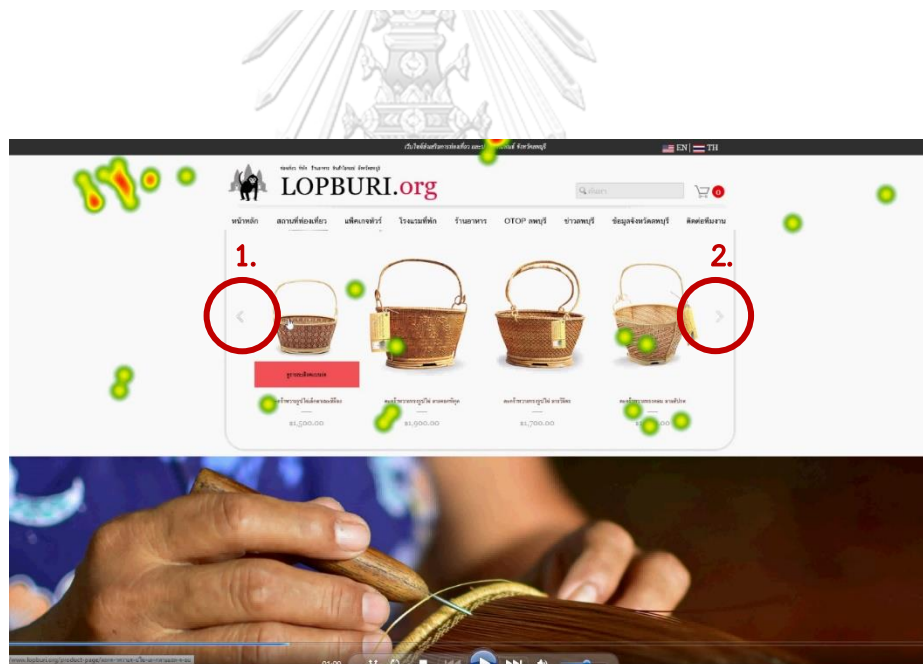


Figure 21. First sampling journey from one of all participants who playing on OTOP official website (part 10 – could click on red circle 1 and 2 to see another product of handicraft)

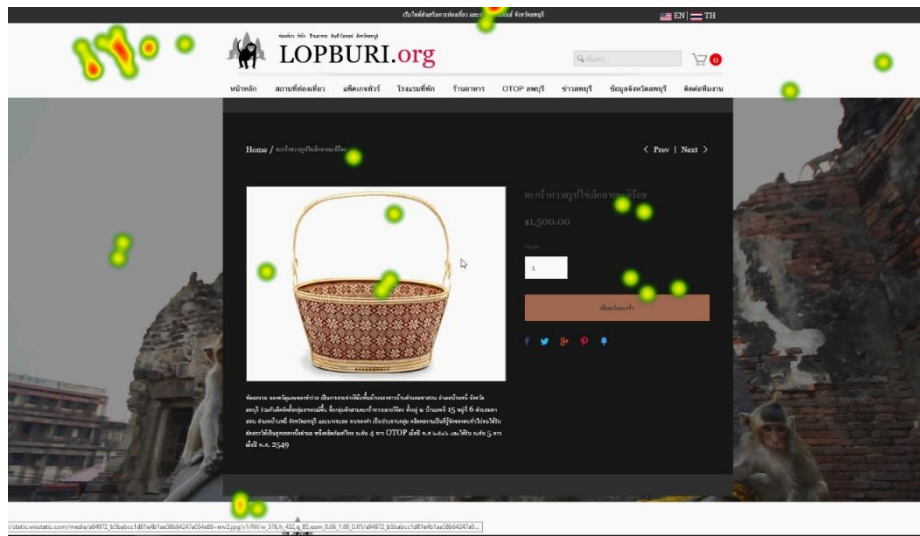


Figure 22. First sampling journey from one of all participants who playing on OTOP official website (part 11 – could see more information about the product by clicking on the red bar under the picture in part 10)

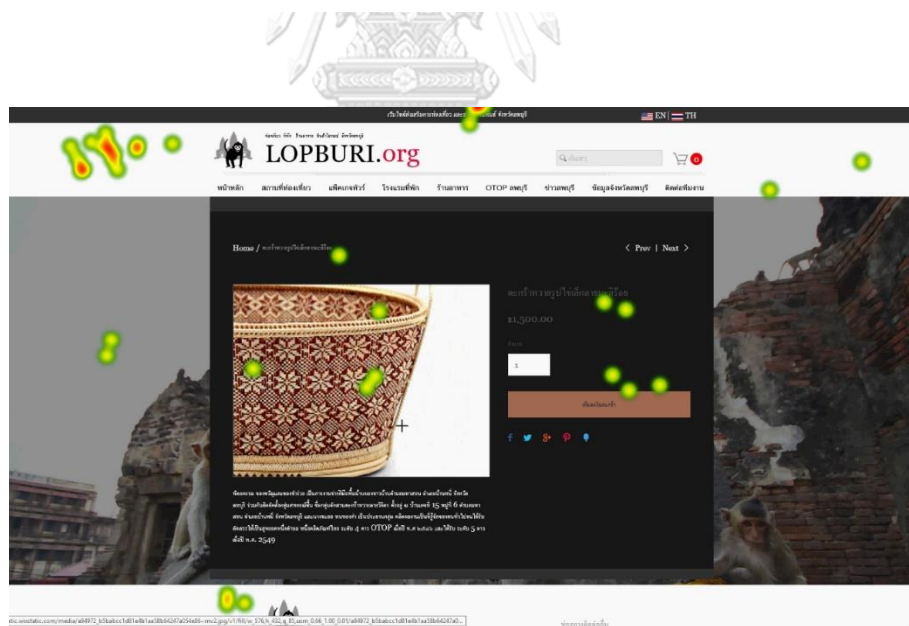


Figure 23. First sampling journey from one of all participants who playing on OTOP official website (part 12 – could zoom in and out of product picture by clicking and hold dragging around the picture)

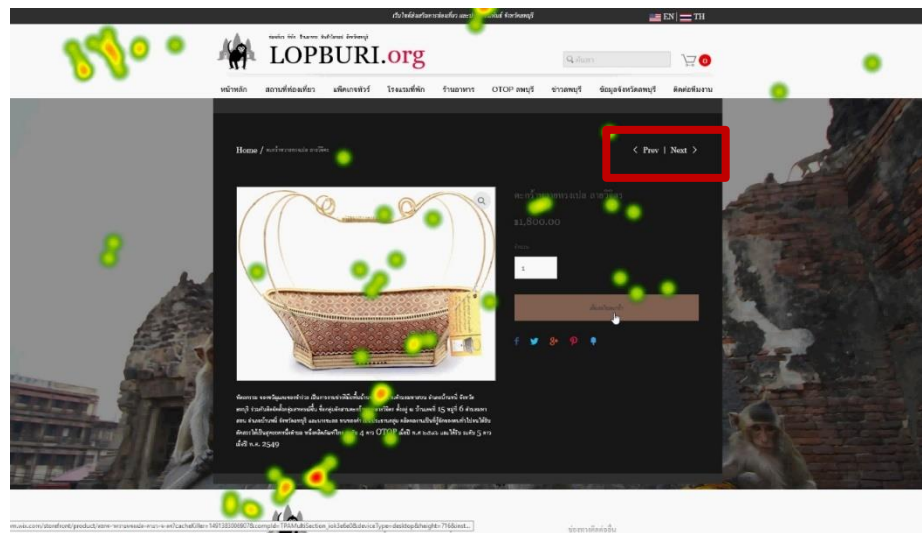


Figure 24. First sampling journey from one of all participants who playing on OTOP official website (part 13 – see previous or next product by clicking on navigator in the red box)

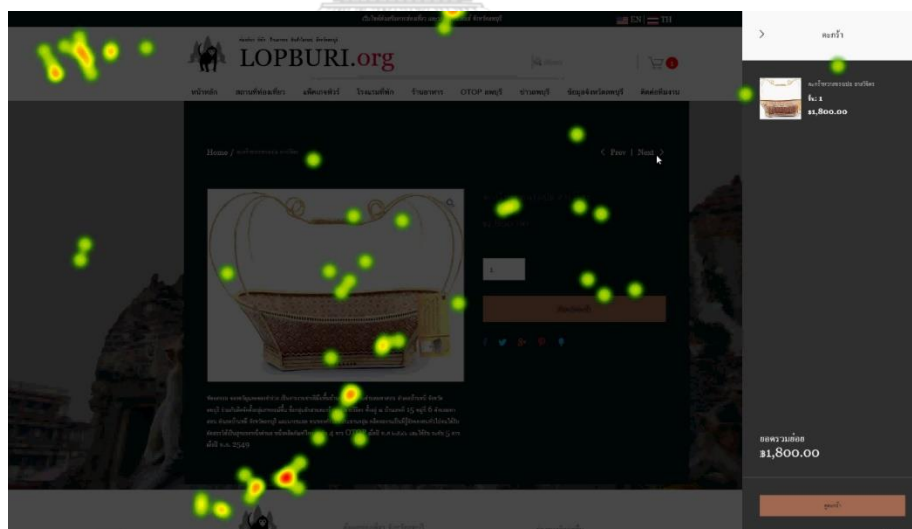


Figure 25. First sampling journey from one of all participants who playing on OTOP official website (part 14 – checking summary ordered on shopping cart by clicking on brown rectangle box in part 13)

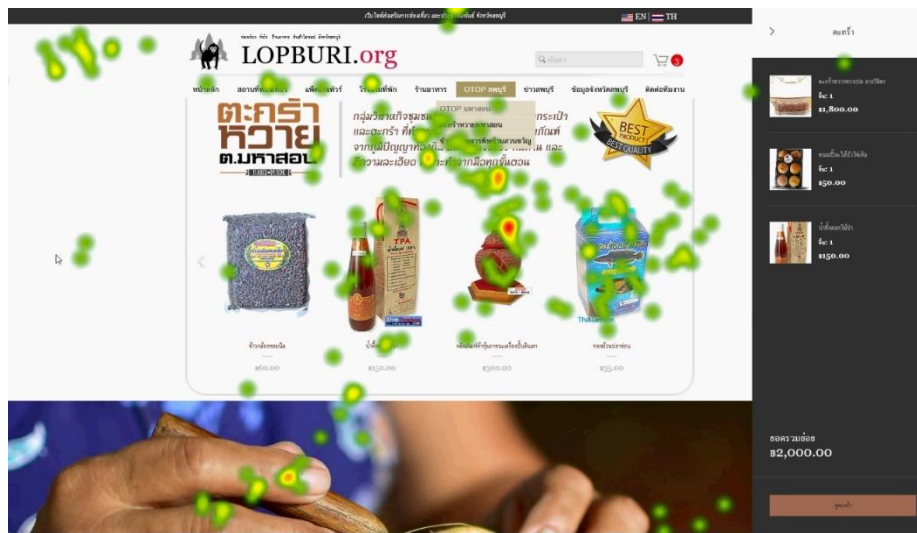


Figure 26. First sampling journey from one of all participants who playing on OTOP official website (part 15 – participant go back to shop more)

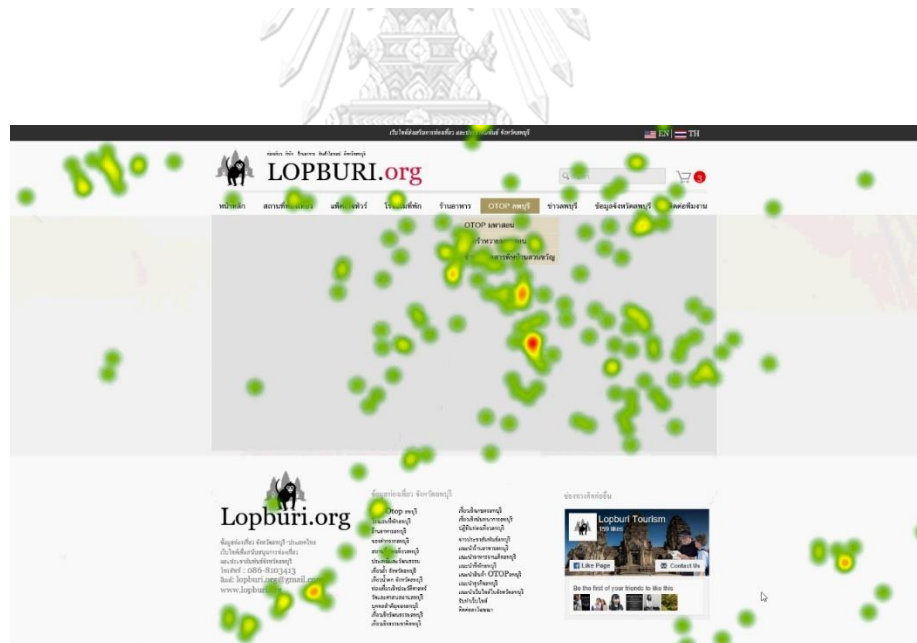


Figure 27. First sampling journey from one of all participants who playing on OTOP official website (part 16 – participant survey on the website again)



Figure 28. First sampling journey from one of all participants who playing on OTOP official website (part 17 – participant done the task)

As Figure 12 – 28 showing 17 parts of journey illustration of one user and others two sample as displayed in Appendix C, which sampling from all 24 participants who have played on Lopburi official OTOP website to complete a given task. From all three journeys, the machine has tracked their eye movement which most dense areas focused on the top navigation bar, middle-right, and bottom-left where that area had located logos, pictures, or contents. So, we can see that the bottom-right of the website mostly don't put any contents on it except the long-large banner and Facebook. However, according to the previous issue of the dense and sparse area, including with appendix D that is showing 24 screens captured and focusing a social media area based on the statistical result from each participant. The findings had explained that most users are not looking at the social media area, which is an inconsistency to their actions on the questionnaire part that concluded the social influence factor does have the most effect on their purchasing intention.

So, we should find out the reason to explain the conflict. Why does user not attend to the social influence as they had revealed in the survey? Are there other factors that made user ignored the social influence factor? That would discuss in the next section.

3.6 Focus Group

In this section, a focus group is a method which consists of a small group of people who discussed issues or topics that the researcher defined. A group could be four up to eight people facing each other, and then the researcher would introduce the issues for discussion and then asked and moderated discussion from members as shown in Figure 29. The key to this method is the interaction among members which differ from the interviewing method, which has an interaction between interviewee and interviewer only (Cameron 2005). Of which this research had gathered two groups of people and named old-generation and new-generation, according to (Fromm 2017), people who aged 36 to 51 years old has classified to Gen X and people who aged 20 to 35 years old classified into Gen Y or Millennials. Moreover, the participants in the old-generation group were gathered people with age around 40 to 45 years old which based on the demographic information as displayed in Table 1, section 3.1, and had experimented in eye tracking part before. While another one, new-generation group, was gathering young people with age around 20 to 25 years old to differentiate to another group.



Figure 29. A small group of people discussing topics defined by the researcher (<https://www.usability.gov/how-to-and-tools/methods/focus-groups.html>)

As we mentioned in the previous section to find out the reason to explain the inconsistency between survey and eye tracking results. We have designed and formed 5 to 7 people into each group, old-generation and new-generation groups, to do a focus group with the topic of the factors that have influenced the customer's intention to buy. We have to talk and asking them some questions to make them more comfortable with each other, like "What are their names?", "What are their favorite hobbies?", moreover, "Have they ever shopping online before?", Etc. Then, we are giving them more specific questions about what we interested in after each participant feel friendlier to each other and let them express and share their opinions to each member in a group, such as "What about their experiences of internet using?", "Have they ever purchase thing online?", "How they choose a website to buy the product?", "What factors would impact on them before decided to buy?", Moreover, "What they think about those factors that affect their decision," and so on. The result from doing a focus group of the member from old generation group, which had a discussion and shared their opinions had been said, as samples as shown in Figure 30.

Mostly members from the old-generation group have opinions in the same direction. An advertisement like videos or promoting posters, which hiring a famous people to promote a product, would make product trustworthy. Moreover, if the product has a condition that matches the description in those ads, it also improves reliability and makes it easy for customers to make purchases. In addition to ads, reviews, and comments from other customers experiences, which could have been heard from other people or could have been seen and read from the e-Commerce website directly, also increase reliability and help the customer make a purchasing decision easier. Meanwhile the new-generation was also given their opinions which similarly to old-generation group. Several samples of their opinions have shown in Figure 31. For example, they also told about having a review, which could be read on the website directly and needs to be a real-time review, or heard a recommend from other people and famous people that would increase reliability and make them easy for purchases, same as old-generation had been said before. Besides from having a review, hiring a star or famous people to promote product according to the trend at that time, like a drama fever, or BNK48 fever, to suitably use for each kind of product

which is also attracted people and make an impact on their purchasing decision. Moreover, the designing and position of items on the webpage also make an impact on new-generation of people which they suddenly ignored things that seem to look like ads even though it has a famous people to promote or has a promotion.

According to those sample opinions from a member of each group in this section have discussed. We found that they were having an influence even on social media or third-party people, which we concluded about the social media that the social view/aspect is not limited to Facebook only. Even though, Facebook was a sample of successful e-Commerce startup, as (Linda 2010) had describes, with a focused differentiation and clear value proposition. The social media are going to be the communication forums of the internet varies which include applications such as email, instant messaging, and chat rooms and also internet sites such as social networking sites, blogs, photo, and video sharing sites such as Facebook, Twitters, Instagram, or YouTube. Moreover, it could come from even the friendship or word-of-mouth between people that had mentioned by (Manneh 2017).

“The website that have shown the social network such as Facebook or Instagram going to help them a lot for searching a review from real usage of the product.”

“If the official website having an advertisement of the product with star also going to increase the trust for making people decide to purchase more than only posting or announcing the product with a picture and its price.”

“Moreover, if they have been invited or recommended by person they’re already well-known or have seen the reviews the come from those people, it’s really increase their purchasing decision of the product.”

Etc.

Figure 30. A sample of members' opinions of the old-generation group

“A website should have an real-time recommended reviews to presented the product whatever it comes from a star comments, famous people, Facebook pages, or trustworthy blogging webpages which really matter on their purchasing decision.”

“An official website should have a video or image movement such as .GIF image to show the production processes which might make the product to be more luxury.”

“Hiring a star or famous people to promote product according to the trend at that time like drama fever or BNK48 fever to suitably use for each kind of product which is also attracted people and do impact on their purchasing decision.”

“In addition, at this time the designing and position of an items on the webpage really do impact on new generation of people which they were suddenly ignored things that seem to looks like an ads even though it has a famous people to promote or has a promotion.”

*จุฬาลงกรณ์มหาวิทยาลัย
Etc.
CHULALONGKORN UNIVERSITY*

Figure 31. A sample of members' opinions of the new-generation group

Chapter 4.

DISCUSSION AND CONCLUSION

From researching the usability factors which have an impact on the purchasing of OTOP products in Thailand with 62 participants on the official community site. The data from both entrepreneurs and customers in North Eastern of Thailand have collected by asking them about their opinions on purchasing a product and what they thought about the factors that they are thinking it has an effect to them for making the purchase decision. Then, multiple regression analysis methods analyzed the data, and the finding from data analysis has verified that the intention to purchase products on community site are having positively significant by those factors; social influence, perceived ease of use, the reliability of website and reliability of the product.

In this chapter, making an OTOP official community site following the ICT policy could be concluded that is helping a community people to do e-Commerce and forcing shopping behavior of customers to changes. Their purchase decision is no longer relied only on physical cue by the customer. Reliability of the product, the reliability of the website, social influence, and perceived ease of use which are the purchasing environment cue founding affect an intention to purchase of customer as a critical cue. The research has revealed those all factor was related positively to the intention of online purchasing of OTOP product. Based on statistical analysis given a conclusion that social influence factor is having the most effect on customer purchasing and from using eye tracking with 24 participants, it has found that the results from the actual use on the website of them which are the result of the heat map from the screen recording. The participants were less interested in social media than the rest of the site which conflicts with the results of statistical analysis.

However, from focus group part, both old-generation and new-generation group are giving their opinions about the social influence, which their opinions are entirely going in the same direction or having a consistency to the statistical result from surveying first part of the experimental. Even though, the eye tracking result giving the different direction that might cause from the position and designing of the

website, as they said as in the last quote of Figure 31 had displayed. The consistency between both results, a surveying and focus group, could be concluded that the social influence is having the most impact to the purchasing intention of customers on a product via using an e-Commerce website.

Moreover, when studying the effect of social influence on the e-Commerce website that has been used in Thailand, such as Lazada, Aliexpress, Shopee, or Weloveshopping as displayed in appendix E. We found each site has shown its social media placement in the center of the page, which its reviews and comments sections are available and accessible for the customer to read. If the community site has developed for being acceptable by the user, the results should have strengthened the demand for developing design and quality of the product. Therefore, inducing people to use an OTOP official website, it should be a concern, pay more attention and improve about the website quality in the format of website usability, design and information quality by both developers and capitalist because it might affect an intention of online purchasing.

Furthermore, this thesis is having the limitation by itself and should be taken care of when generalizing findings. The factor which directly supports the intention of online purchasing was investigated and provided the initial results. However, it is only investigating some factors named; reliability of the product, the reliability of the website, perceived ease of use and social influence. Thus, the afterward study could investigate another dimension that was not comprehensive in this research, and the differentiating factor such as brand image, knowledge, and awareness would affect the perception of the customer on website quality. Howsoever, those are out with the scope of a factor that studied in this research. Thereby, we would introduce the afterward studied to investigate more factors, which affect the intention of online purchasing on the website and would be investigated more on others official websites.

Here is some rough idea we proposed by making a mock-up page according to focus group opinions. The features inspired from an existing e-Commerce website, which popular in Thailand, about the social influence factor which effects on purchasing intention that has to adapt and applies to develop or organize the elements of the website for making the page look attractive and refer to the user's comments.

By the first idea, as shown in Figure 110, Appendix F, we having a video or image movement to show the production processes might increase their trust and also make the product to be more luxury and could be sharing. Another idea, as in Figure 111, Appendix F, is about moving a location of social element from the bottom-left and also having a recommended review that is a real-time review to make customer read it instantly instead of clicking on the social icon and linked to another page and some might need to login first and then could read comments. So, this is a just rough idea about some features that would be a challenge to the further work for better design on official OTOP website in Thailand.



REFERENCES

- Breeze, J. (2014). "Eye tracking shows that people look at other people's faces."
- Brown, J. D. (2002). "The Cronbach alpha reliability estimate." JALT Testing & Evaluation SIG Newsletter 6(1).
- Burnkrant, R. E. and A. Cousineau (1975). "Informational and normative social influence in buyer behavior." Journal of Consumer research 2(3): 206-215.
- Cameron, J. (2005). "Focusing on the focus group." Qualitative research methods in human geography 2: 116-132.
- Center, N. E. a. C. T., N. S. a. T. D. Agency and M. o. S. a. Technology (2011). Executive Summary Thailand Information and Communication Technology (ICT) Policy Framework (2011-2020): ICT2020, Ministry of Information and Communication Technology.
- Cohen, J. B. and E. Golden (1972). "Informational social influence and product evaluation." Journal of applied Psychology 56(1): 54.
- Corbitt, B. J., T. Thanasankit and H. Yi (2003). "Trust and e-commerce: a study of consumer perceptions." Electronic commerce research and applications 2(3): 203-215.
- D Gefen, D. S. (October, 2000). "The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption." Journal of the Association for Information Systems 1, Article 8.
- Davis, F. D. (1989). "Perceived usefulness, perceived ease of use, and user acceptance of information technology." MIS quarterly: 319-340.
- Davis, F. D., R. P. Bagozzi and P. R. Warshaw (1989). "User acceptance of computer technology: a comparison of two theoretical models." Management science 35(8): 982-1003.
- Denpaiboon, C. and C. Amatasawatdee (2012). "Similarity and difference of one village one product (OVOP) for rural development strategy in Japan and Thailand." Japanese Studies Journal Special Issue: Regional Cooperation for Sustainable Future in Asia (Thammasat, 2012).

- Fromm, J. (2017). "Getting to Know Gen Z: How The Pivotal Generation is Different from Millennials."
- Higgins, J. E. D. (2005). "The Radical Statistician: Unleashing the Power NY (US) of Applied Statistics in the Real World." (Chapter 2).
- Kim, Y. and J. Srivastava (2007). Impact of social influence in e-commerce decision making. Proceedings of the ninth international conference on Electronic commerce, ACM.
- Krosnick, J. A. (1999). "Survey research." *Annual review of psychology* 50(1): 537-567.
- Lance, C. E., M. M. Butts and L. C. Michels (2006). "The sources of four commonly reported cutoff criteria: What did they really say?" *Organizational research methods* 9(2): 202-220.
- Lee, M. K., N. Shi, C. M. Cheung, K. H. Lim and C. L. Sia (2011). "Consumer's decision to shop online: The moderating role of positive informational social influence." *Information & management* 48(6): 185-191.
- Linda, S. (2010). "Social commerce–e-commerce in social media context." *World Academy of Science. Engineering and Technology* 72: 39-44.
- Manneh, M. (2017). *The Influence of Social Media on E-commerce: Fast Fashion Multinational Companies.*
- Natsuda, K., K. Igusa, A. Wiboonpongse and J. Thoburn (2012). "One Village One Product–rural development strategy in Asia: the case of OTOP in Thailand." *Canadian Journal of Development Studies/Revue canadienne d'études du développement* 33(3): 369-385.
- Poole, A. and L. Ball "Eye tracking in human-computer interaction and usability research: current status and future prospects, 2005." United Kingdom: Psychology Department, Lancaster University.
- Rashotte, L. (2007). "Social influence." *The Blackwell encyclopedia of sociology.*
- Schumann, F. R. (2016). "A Study of One Village One Product (OVOP) and Workforce Development: Lessons for Engaging Rural Communities around the World." School of Business and Public Administration.

- Sharma, C. and S. K. Dubey (2014). Analysis of eye tracking techniques in usability and HCI perspective. Computing for Sustainable Global Development (INDIACom), 2014 International Conference on, IEEE.
- Sukati, I., A. B. Hamid, R. Baharun and R. M. Yusoff (2012). "The study of supply chain management strategy and practices on supply chain performance." *Procedia-Social and Behavioral Sciences* 40: 225-233.
- Venkatesh, V. and F. D. Davis (2000). "A theoretical extension of the technology acceptance model: Four longitudinal field studies." *Management science* 46(2): 186-204.
- Wee, C. S., M. S. B. M. Ariff, N. Zakuan, M. N. M. Tajudin, K. Ismail and N. Ishak (2014). "Consumers perception, purchase intention and actual purchase behavior of organic food products." *Review of Integrative Business and Economics Research* 3(2): 378.
- Wong, W., M. Bartels and N. Chrobot (2014). Practical eye tracking of the ecommerce website user experience. *International Conference on Universal Access in Human-Computer Interaction*, Springer.
- Yang, S.-F. and H.-H. Lin (2014). Effects of Attribute Framing Varying with the Elaboration in Online Shopping: An Eye-Tracking Approach. *System Sciences (HICSS)*, 2014 47th Hawaii International Conference on, IEEE.



APPENDIX

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Appendix A1: Survey Form (TH version)



คณะวิทยาศาสตร์
จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม

วัตถุประสงค์

แบบสอบถามนี้เป็นส่วนหนึ่งของโครงการวิจัย เรื่อง “การศึกษาพฤติกรรมของผู้บริโภคสินค้า OTOP ผ่านการให้บริการระบบพาณิชย์อิเล็กทรอนิกส์ (e-Commerce) บนเว็บไซต์” โดยข้อมูลจากแบบสอบถามนี้จะมีความลับเพื่อใช้ในการวิเคราะห์ข้อมูลทางสถิติ จึงขอความอนุเคราะห์ท่านโปรดพิจารณาตอบข้อความและกาเครื่องหมายถูกในหัวข้อที่ตรงกับความคิดเห็นของท่าน การมีส่วนร่วมของท่านมีความสำคัญอย่างยิ่ง ในการช่วยให้เราทราบข้อมูลต่างๆ ที่สำคัญต่องานวิจัย ซึ่งงานวิจัยนี้จะ เป็นประโยชน์อย่างมากต่อการพัฒนาประสิทธิภาพของการจัดการการตลาดเชิงเครือข่ายสังคมออนไลน์ในอนาคต

การสำรวจนี้เป็นส่วนหนึ่งของการทำโครงการงานวิทยาสตรระดับปริญญาโทของนางสาว กฤติกา อัครสารกุล เลขประจำตัวนิต 5872634923 สาขาวิทยาการคอมพิวเตอร์และเทคโนโลยี สารสนเทศ ภาควิชาคณิตศาสตร์และวิทยาการคอมพิวเตอร์ คณะวิทยาศาสตร์ จุฬาลงกรณ์ มหาวิทยาลัย โดยแบบสำรวจนี้แบ่งออกเป็น 4 ส่วน ได้แก่

ตอนที่ 1 ข้อมูลทั่วไปของผู้กรอกแบบสอบถาม

ตอนที่ 2 ประสิทธิภาพการใช้อินเทอร์เน็ต (Internet Usage)

ตอนที่ 3 ประสิทธิภาพและความคิดเห็นที่มีต่อการซื้อสินค้า OTOP ผ่านระบบพาณิชย์ อิเล็กทรอนิกส์ ของชุมชน (Community e-Commerce)

ตอนที่ 4 คำถามเพิ่มเติมและข้อเสนอแนะ

ทั้งนี้ข้อมูลของท่านจะถูกเก็บไว้เป็นความลับและไม่นำไปใช้ในจุดประสงค์อื่น นอกเหนือจาก การทำวิจัยดังกล่าว ดังนั้นคณะผู้วิจัยจึงใคร่ขอความร่วมมือให้ท่านตอบแบบสำรวจอย่างตรงไปตรงมา ตามความเป็นจริง แบบสำรวจนี้ใช้เวลาในการตอบประมาณ 15 นาที

ขอขอบพระคุณท่านมา ณ โอกาสนี้ ที่กรุณาสละเวลาอันมีค่าของท่าน ในการตอบแบบ สสำรวจของเรา

คำชี้แจง กรุณาใส่เครื่องหมายถูกลงในช่อง หน้าข้อความที่ตรงกับข้อเท็จจริงหรือความคิดเห็นของท่านมากที่สุด

ตอนที่ 1 ข้อมูลทั่วไปของผู้กรอกแบบสอบถาม

1. เพศ

- ชาย หญิง

2. อายุ

- ต่ำกว่า 20 ปี 21 – 30 ปี 31 – 40 ปี
 41 – 50 ปี 51 – 60 ปี 61 ปีขึ้นไป

3. ท่านเกี่ยวข้องกับโครงการหนึ่งตำบลหนึ่งผลิตภัณฑ์ (OTOP) ในฐานะอะไร

- ผู้บริโภค ผู้ประกอบการ

ตอนที่ 2 ประสบการณ์การใช้อินเทอร์เน็ต (Internet Usage)

4. ท่านใช้อินเทอร์เน็ตมาเป็นระยะเวลาเท่าใด

- ต่ำกว่า 1 ปี 1 – 2 ปี 3 – 4 ปี
 5 – 6 ปี มากกว่า 6 ปี

5. ระยะเวลาที่ท่านใช้อินเทอร์เน็ตเฉลี่ยเป็นชั่วโมงต่อวัน

- ต่ำกว่า 2 ชั่วโมง 2 - 4 ชั่วโมง 4 - 6 ชั่วโมง 6 ชั่วโมงขึ้นไป

6. ท่านใช้อินเทอร์เน็ตเพื่อวัตถุประสงค์ใด (ตอบได้มากกว่า 1 ข้อ)

- เพื่อติดต่อสื่อสาร เพื่อซื้อขายสินค้าและบริการ
 เพื่อค้นหาหาข้อมูลเพื่อการศึกษาหรือการวิจัย เพื่อดูข้อมูลข่าวสาร
 เพื่อความบันเทิง อื่นๆ (โปรดระบุ).....

7. ท่านใช้อินเทอร์เน็ตบนมือถือหรือไม่

- ใช่ ไม่ใช่

8. ท่านใช้อินเทอร์เน็ตบนมือถือ ในเรื่องใดบ้าง (ตอบได้มากกว่า 1 ข้อ)

- เพื่อติดต่อสื่อสาร เพื่อซื้อขายสินค้าและบริการ
 เพื่อค้นหาหาข้อมูลเพื่อการศึกษาหรือการวิจัย เพื่อดูข้อมูลข่าวสาร
 เพื่อความบันเทิง / เล่นเกมส์ อื่นๆ (โปรดระบุ).....

9. ปัจจุบัน ท่านใช้บริการเครือข่ายออนไลน์ในการตัดสินใจเพื่อซื้อสินค้าบ้าง (ตอบได้มากกว่า 1ข้อ)

- Facebook LINE
 Instagram Twitter
 Weloveshopping อื่นๆ (โปรดระบุ).....

10. สถานที่ที่ท่านใช้อินเทอร์เน็ตเป็นประจำ (ตอบได้มากกว่า 1 ข้อ)

- บ้าน ที่ทำงาน ร้านที่ให้บริการ
 สถานศึกษา ... อื่นๆ (โปรดระบุ).....

11. ปัญหาและอุปสรรคที่ท่านพบในการใช้งานอินเทอร์เน็ต (ตอบได้มากกว่า 1 ข้อ)

- ปัญหาด้านการใช้ภาษาอังกฤษในการเข้าถึงแหล่งข้อมูลและติดต่อสื่อสาร
 ปัญหาด้านการดาวน์โหลดข้อมูลล่าช้า
 ปัญหาเรื่องอัตราค่าบริการอินเทอร์เน็ตของผู้ให้บริการยังคงสูงอยู่
 ปัญหาด้านเวลาที่ไม่เอื้ออำนวยต่อการใช้งาน
 อื่นๆ (โปรดระบุ)

12. ท่านเคยมีประสบการณ์ในการซื้อสินค้าและบริการผ่านอินเทอร์เน็ตหรือไม่

- เคย ไม่เคย (ข้ามไปข้อ19)

13. ท่านเคยมีประสบการณ์ในการซื้อสินค้าและบริการผ่านอินเทอร์เน็ตบนมือถือหรือไม่

- เคย ไม่เคย (ข้ามไปข้อ 19)

14. หากเคยท่านซื้อสินค้าและบริการผ่านอินเทอร์เน็ตบนมือถือบ่อยแค่ไหน

- 1 - 2 ครั้งต่อเดือน 3 - 4 ครั้งต่อเดือน มากกว่า 5 ครั้งต่อเดือนขึ้นไป

15. หากให้ท่านเลือก ท่านจะเลือกซื้อสินค้าผ่านเว็บไซต์หรือผ่านมือถือ

- เว็บไซต์ มือถือ

ตอนที่ 3 ประสิทธิภาพและความคิดเห็นที่มีต่อการซื้อสินค้า OTOP ผ่านระบบพาณิชย์อิเล็กทรอนิกส์ ของชุมชน (Community e-Commerce)

16. สินค้า OTOP ที่ท่านเคยสั่งซื้อผ่านอินเทอร์เน็ต (ตอบได้มากกว่า 1 ข้อ)
- อาหาร / เครื่องดื่ม ผัก / ผลไม้ / ดอกไม้สด เครื่องแต่งกาย
- เครื่องประดับ ของตกแต่งบ้าน อื่นๆ (โปรดระบุ).....
17. ท่านชำระเงินในการสั่งซื้อสินค้าและบริการผ่านทางอินเทอร์เน็ต ด้วยทางใดบ้าง (ตอบได้มากกว่า 1 ข้อ)
- บัตรเครดิต / เดบิต โอนเงินเข้าบัญชี เงินสด
- บริการ Internet Banking หรือ Payment Gateway อื่นๆ (โปรดระบุ).....
18. จำนวนเงินมากที่สุดที่ท่านเคยสั่งซื้อสินค้าผ่านทางอินเทอร์เน็ต
- ต่ำกว่า 2,บาท 000 2,000 - 3,บาท 999 4,000 - 5,บาท 999
- 6,000 - 7,บาท 999 8,000 - 9,บาท 999 10,บาทขึ้นไป 000
19. หากในอนาคตท่านมีโอกาสสั่งซื้อสินค้าและบริการผ่านระบบ e-Commerce ท่านจะซื้อหรือไม่
- ซื้อ ไม่ซื้อ
20. ท่านคิดว่าเหตุผลใดที่ทำให้ท่านเลือกซื้อสินค้าผ่านระบบ e-Commerce (เลือกได้มากกว่า 1 ข้อ)
- ราคาถูก สะดวกสบาย / ไม่มีเวลาไปห้างสรรพสินค้า
- เพื่อนแนะนำ สินค้าไม่มีวางขายตามร้านค้าทั่วไป
- มีความน่าเชื่อถือ อื่นๆ (โปรดระบุ)
21. ท่านคิดว่าปัจจัยใดมีผลต่อการตัดสินใจซื้อของผู้บริโภคมากที่สุด (ตอบเพียงหนึ่งข้อ)
- ปัจจัยด้านผลิตภัณฑ์ ปัจจัยด้านราคา
- ปัจจัยด้านช่องทางการจัดจำหน่าย ปัจจัยด้านการส่งเสริมการตลาด
22. ท่านคิดว่าผู้ผลิต / ผู้จำหน่าย ควรปรับปรุงปัจจัยการผลิตสินค้าด้านใดมากที่สุด (ตอบเพียงหนึ่งข้อ)
- ปัจจัยด้านผลิตภัณฑ์ ปัจจัยด้านราคา
- ปัจจัยด้านช่องทางการจัดจำหน่าย ปัจจัยด้านการส่งเสริมการตลาด

23. ความคิดเห็นเกี่ยวกับปัจจัยที่ส่งผลต่อการตัดสินใจซื้อสินค้าผ่านเว็บไซต์ของชุมชนสำหรับสินค้า OTOP (Community e-Commerce)

ปัจจัยที่ส่งผลต่อการตัดสินใจซื้อสินค้า OTOP	ไม่เห็นด้วย อย่างยิ่ง	ค่อนข้าง ไม่เห็นด้วย	ไม่แน่ใจ	ค่อนข้าง เห็นด้วย	เห็นด้วย อย่างยิ่ง
	1	2	3	4	5
การรับรู้ถึงความน่าเชื่อถือของตัวสินค้า					
ท่านคิดว่าสินค้าที่มีการแสดงตราและรายละเอียดมีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าสินค้าที่มีการแสดงเครื่องหมาย OTOP มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าสินค้าที่มีการแสดงเครื่องหมายที่ผ่านการตรวจสอบคุณสมบัติหรือคุณลักษณะต่างๆ ตามมาตรฐาน (อย. / อื่นๆ) มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าสินค้าที่มีการแสดงเครื่องหมายรับรองความเหมาะสมต่อกลุ่มผู้บริโภคเฉพาะ (ฮาลาล / ภูมิแพ้ / อื่นๆ) มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่ารูปลักษณ์ของสินค้า มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าราคาของสินค้า มีผลต่อการเลือกซื้อสินค้า					
การรับรู้ถึงความน่าเชื่อถือของตัวเว็บไซต์					
ท่านคิดว่าชื่อเสียงของเว็บไซต์ชุมชนมีความสำคัญต่อการเลือกซื้อสินค้า					
ท่านคิดว่าเว็บไซต์ชุมชนที่มีการแสดงสัญลักษณ์ยืนยันการจดทะเบียน E-Commerce (DBD register) มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่ารูปแบบของเว็บไซต์ชุมชนที่ใช้งานง่าย มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าความสวยงามของเว็บไซต์ มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าเว็บไซต์ชุมชนที่มีการอัปเดตข้อมูลให้ทันสมัยตลอดเวลา มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าชื่อเสียงของเว็บไซต์มีความสำคัญในการเลือกซื้อสินค้าอีกในอนาคต					

การรับรู้ถึงความง่ายในการใช้งาน					
ท่านเห็นด้วยหรือไม่ กับเว็บไซต์ชุมชนสามารถทำความเข้าใจและเรียนรู้การใช้งานได้ด้วยตัวเอง มีผลต่อการเลือกซื้อสินค้า					
ท่านคิดว่าเว็บไซต์ชุมชนสามารถเข้าถึงข้อมูลบนอินเทอร์เน็ตได้ง่าย					
ท่านคิดว่าท่านสามารถเข้าสู่เว็บไซต์ชุมชนบนเครื่องข่ายสังคมออนไลน์เป็นเรื่องง่าย					
ท่านคิดว่าท่านสามารถนำความเข้าใจและความรู้ในการใช้งานมาปรับเปลี่ยนให้เข้ากับความต้องการของท่านเอง					
การรับรู้เชิงสังคม					
ท่านเห็นด้วยหรือไม่ที่บุคคลในสังคมทั่วไปมีผลต่อการเลือกซื้อสินค้า					
ท่านเห็นด้วยหรือไม่ ที่กระแสในการซื้อสินค้าผ่านเว็บไซต์ชุมชนในสังคมมีผลต่อการเลือกซื้อสินค้า					
ความตั้งใจในการซื้อสินค้า					
ท่านจะเลือกใช้เว็บไซต์ของชุมชนอีกในการเลือกซื้อสินค้า					
ท่านวางแผนที่จะเลือกซื้อสินค้าจากเว็บไซต์ของชุมชนภายในเร็วๆ นี้					
ท่านวางแผนจะซื้อสินค้าจากเว็บไซต์ของชุมชนในระยะยาวข้างหน้า					

Appendix A2: Survey Form (EN - translated version)



Survey Form

Objective

This questionnaire is one part of a research project entitled “Factors Influencing Intention to Purchase Local Community Product on e-Commerce Website: Case of One Tambon One Product (OTOP) in Thailand.” The data from this questionnaire will be confidential for statistical analysis. Please consider the message and checking the box corresponding to participant's opinions. The participation is very important to help us know the information for helping the research, and it will greatly benefit the development of effective online social marketing management.

This survey is a part of Master's degree thesis of Miss Krittika Akasarakul, student ID 5872634923, Major in Computer Science and Information Technology, Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University. In this survey is divided into four sections.

Section 1 General Information of participants

Section 2 Participant's Internet Usage

Section 3 Experiences and Opinions on the OTOP Product Purchasing through
Community e-Commerce

Section 4 Additional Questions and Suggestions

To ensuring, the information will be kept confidential and will not use for other purposes, except for this research. Therefore, the researcher would like to cooperate with the participant to answer the survey straightforwardly. This survey would take about 15minutes to complete.

Thankful for paying a precious time to response our survey.

Notice. Please fill the checkbox in that indicate the most matching to your opinions.

Section 1 General Information of participants

1. Gender

Male Female

2. Age

≤ 20 yrs. 21 – 30 yrs. 31 – 40 yrs.
 41 – 50 yrs. 51 – 60 yrs. ≥ 61 yrs.

3. What are you involved about OTOP?

Customer Entrepreneur

Section 2 Participant's Internet Usage

4. How long do you use the internet?

≤ 1 yr. 1 – 2 yrs. 3 – 4 yrs.
 5 – 6 yrs. ≥ 6 yrs.

5. The average time you use the internet an hour per day?

≤ 2 hrs. 2 - 4 hrs. 4 - 6 hrs. ≥ 6 hrs.

6. Do you use the Internet for any purpose? (Answer more than one)

For communication For selling goods and service
 For researching For information and news
 For entertaining Others (please specific).....

7. Do you use the mobile internet?

Yes No

8. Do you use the mobile internet in what way? (Answer more than one)

- For communication For selling goods and service
 For researching For information and news
 For entertaining/gaming Others (please specific).....

9. Currently, what online network do you use to make a purchase decision? (Answer more than one)

- Facebook LINE
 Instagram Twitter
 Weloveshopping Others (please specific).....

10. Where you regularly use the internet? (Answer more than one)

- Home Office Service shop
 Academy Others (please specific).....

11. Problems you have found in using the internet? (Answer more than one)

- The problem with using English to access resources and to communicate
 Delayed download issues
 The internet service fee of the service provider is still high
 The problem of time unfavorable to use
 Others (please specific)

12. Have you ever had the experience of buying goods and services over the internet?

- Yes No (skip to 19.)

13. Have you ever had the experience of buying goods and services over the internet on your mobile?

- Yes No (skip to 19.)

14. How often do you purchase products and services over the internet on your mobile?

- 1 - 2 times/mo. 3 - 4 times/mo. ≥ 5 times/mo.

15. If you can choose, which one do you choose to purchase product between website or mobile?

- Website Mobile

Section 3 Experiences and Opinions on the OTOP Product Purchasing through Community e-Commerce

16. Which category of OTOP products that you have purchased over the internet (Answer more than one)

- Food / Beverage Vegetables / Fruits / Flowers
 Clothes Accessories
 Home decoration Others (please specific).....

17. Which way have you paid for goods and services over the internet? (Answer more than one)

- Credit / Debit card Account transfers Cash
 Internet Banking / Payment Gateway Others (please specific).....

18. The highest amount you have ever purchased over the internet?

- ≤ 2, 000Baht 2,000 - 3, 999Baht 4,5 - 000, 999Baht
 6,7 - 000, 999Baht 8,9 - 000, 999Baht ≥ 10, 000Baht

19. If the future you could purchase goods and services through e-Commerce, would you purchase?

- Yes No

20. What is the reason that makes you purchase products via e-Commerce? (Answer more than one)

- Low price Convenient
 Friends recommend Not sold by the general store
 Trustworthy Others (please specific).....

21. What factors do you think has the most impact on consumer purchasing decisions? (Only one answer)

Products

Price

Distribution channel

Marketing promotions

22. Which of the following that you think manufacturers/suppliers should improve the most? (Only one answer)

Products

Price

Distribution channel

Marketing promotions



23. Opinions about factors which influencing OTOP products purchase via Community e-Commerce website

Factors influencing OTOP purchase decision		Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
Reliability of Product						
Do you think that merchandise with badges and details affect the purchase						
Do you think the product that have OTOP trademark affect the purchase						
Do you think that products which have been marked with a qualification check or standard feature (such as FDA marked) affect purchasing product						
Do you think that products that has been labeled a marked which fit for a specific consumer group (such as Allergen labelling or Halal labelling) has effect purchasing product						
Do you think that the appearance of the products affects purchasing product						
Do you think that the price of the products affects purchasing product						
Reliability of Website						
Do you think the reputation of a community site is important to customer purchasing						
Do you think that community sites that display the E-Commerce registration badge (Department of Business Development registration) affect purchasing product						
Do you think that the format or pattern of the easy-to-use community site affects purchasing product						
Do you think that the beauty of a community site affects purchasing product						

Do you think that community sites that have updated information all the time affect purchasing product							
Do you think the reputation of the community sites is important to effect purchasing product							
Perceived Ease of Use							
Do you agree that the community sites which you could understand and learn by yourself have affect purchasing product							
Do you think community sites can easily access information on the internet							
Do you think accessing the community site on a social networking site is easy							
Do you think that you can bring your understanding and knowledge to use and adapt to your needs by yourself							
Social Influence							
Do you agree that the <u>general public</u> people affects purchasing product							
Do you agree that the flow of purchases through community sites on social networking affects purchasing product							
Do you agree that the person who influences you affects purchasing product							
Intention to Purchase							
You will use the community site to make purchases <u>again</u>							
You are planning to shop from the community site soon							
You are planning to buy from the community site in the long-term							

24. Please rank the following reasons to help you make a purchase decision on OTOP products from 1 to 4.

Reasons	Rank
1. Reliability of website	
2. Reliability of products	
3. Social influence	
4. Convenient to purchase	

Section 4 Additional Questions and Suggestions

25. Additional suggestions you would like to have on the website of Community for OTOP. (Community e-Commerce)

.....

.....

.....

.....

.....

.....

.....

.....

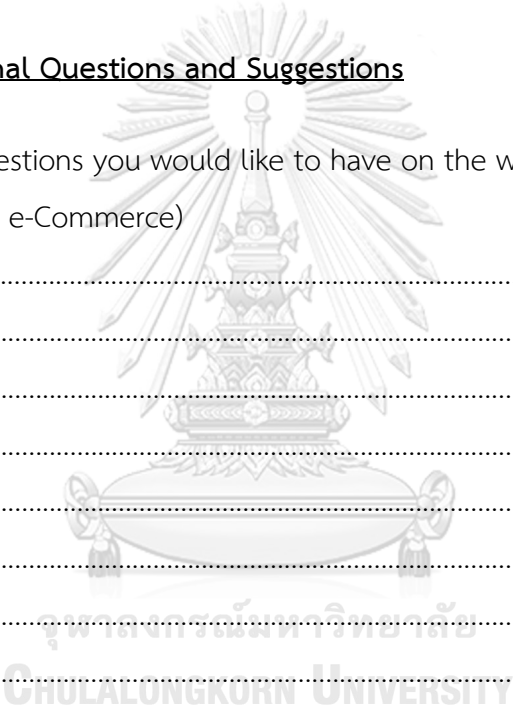
.....

.....

.....

.....

.....



Appendix B: Data Tables of Reliability Statistical Analysis

Table 4. Reliability Statistical Analysis Data

	Mean	Standard Deviation	N	Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	N of Items	Cronbach's Alpha If Item Deleted
Reliability of Product							
- (PT1) Do you think that products which have been marked with a qualification check or standard feature (such as FDA marked) affect purchasing product	4.1613	0.94424	62	0.967	0.969	19	0.964
- (PT2) Do you think that products that has been labeled a marked which fit for a specific consumer group (such as Allergen labelling or Halal labelling) has effect purchasing product	4.0968	0.93580	62	0.967	0.969	19	0.965
- (PT3) Do you think that the appearance of the products affects purchasing product	4.2581	0.93975	62	0.967	0.969	19	0.965

- (PT4) Do you think that the price of the products affects purchasing product	4.1935	1.05331	62	0.967	0.969	19	0.967
Reliability of Website							
- (WT1) Do you think the reputation of a community site is important to customer purchasing	3.9839	1.19414	62	0.967	0.969	19	0.967
- (WT2) Do you think that community sites that display the E-Commerce registration badge (Department of Business Development registration) affect purchasing product	4.0323	0.95759	62	0.967	0.969	19	0.965
- (WT3) Do you think that the format or pattern of the easy-to-use community site affects purchasing product	4.1613	1.07419	62	0.967	0.969	19	0.965
- (WT4) Do you think that the beauty of a community site affects purchasing product	4.1129	0.97686	62	0.967	0.969	19	0.966
- (WT5) Do you think that community sites that have updated information all the time affect purchasing product	4.3226	0.90126	62	0.967	0.969	19	0.965

Perceived ease of use	- (EU1) Do you think community sites can easily access information on the internet	3.8065	1.00554	62	0.967	0.969	19	0.965
	- (EU2) Do you think accessing the community site on a social networking site is easy	3.7419	1.14427	62	0.967	0.969	19	0.966
	- (EU3) Do you think that you can bring your understanding and knowledge to use and adapt to your needs by yourself	3.7581	1.09672	62	0.967	0.969	19	0.969
Social Influence	- (SI1) Do you agree that the general public people affects purchasing product	3.7581	0.93538	62	0.967	0.969	19	0.965
	- (SI2) Do you agree that the flow of purchases through community sites on social networking affects purchasing product	3.8871	0.87037	62	0.967	0.969	19	0.965
	- (SI3) Do you agree that the person who influences you affects purchasing product	3.7903	0.96048	62	0.967	0.969	19	0.965

Appendix C1: The second journey from the second participant who had been sampling from all 24 participants and had played an OTOP official website



Figure 32. Second sampling journey from one of all participants who playing on OTOP official website (part 1)



Figure 33. Second sampling journey from one of all participants who playing on OTOP official website (part 2 – by scrolling down the page from part 1)



Figure 34. Second sampling journey from one of all participants who playing on OTOP official website (part 3 – by scrolling down the page from part 2)



Figure 35. Second sampling journey from one of all participants who playing on OTOP official website (part 4 – by scrolling down the page from part 3)

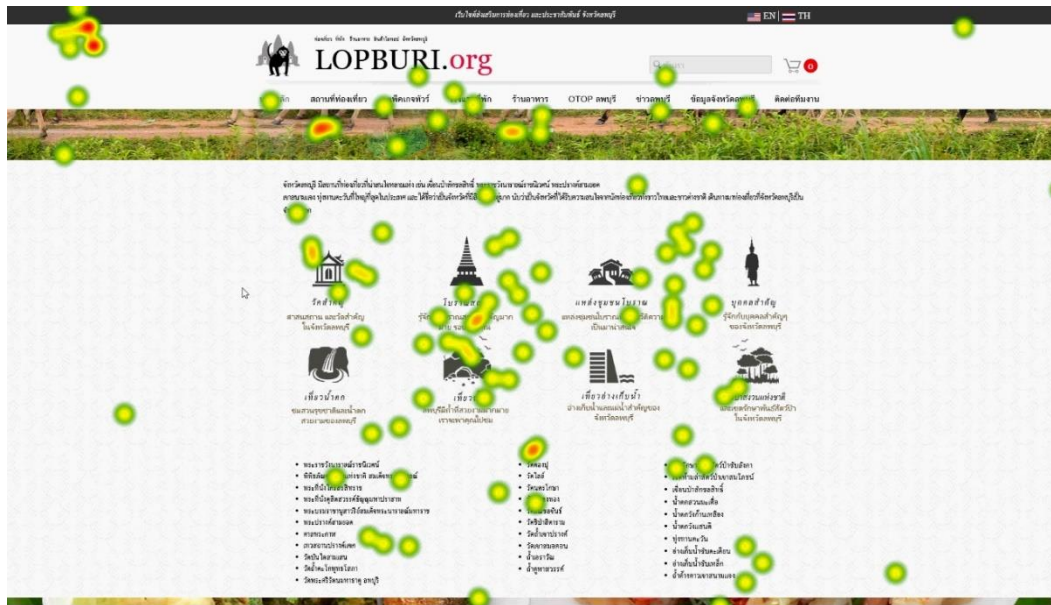


Figure 36. Second sampling journey from one of all participants who playing on OTOP official website (part 5 – by scrolling down the page from part 4)



Figure 37. Second sampling journey from one of all participants who playing on OTOP official website (part 6 – by scrolling down the page from part 5)

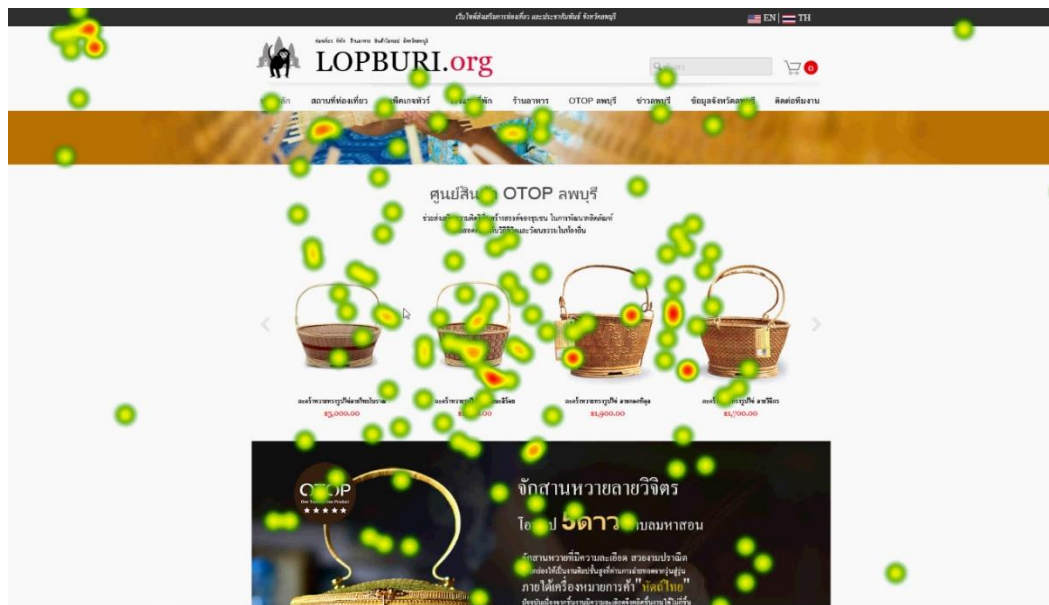


Figure 38. Second sampling journey from one of all participants who playing on OTOP official website (part 7 – by scrolling down the page from part 6)

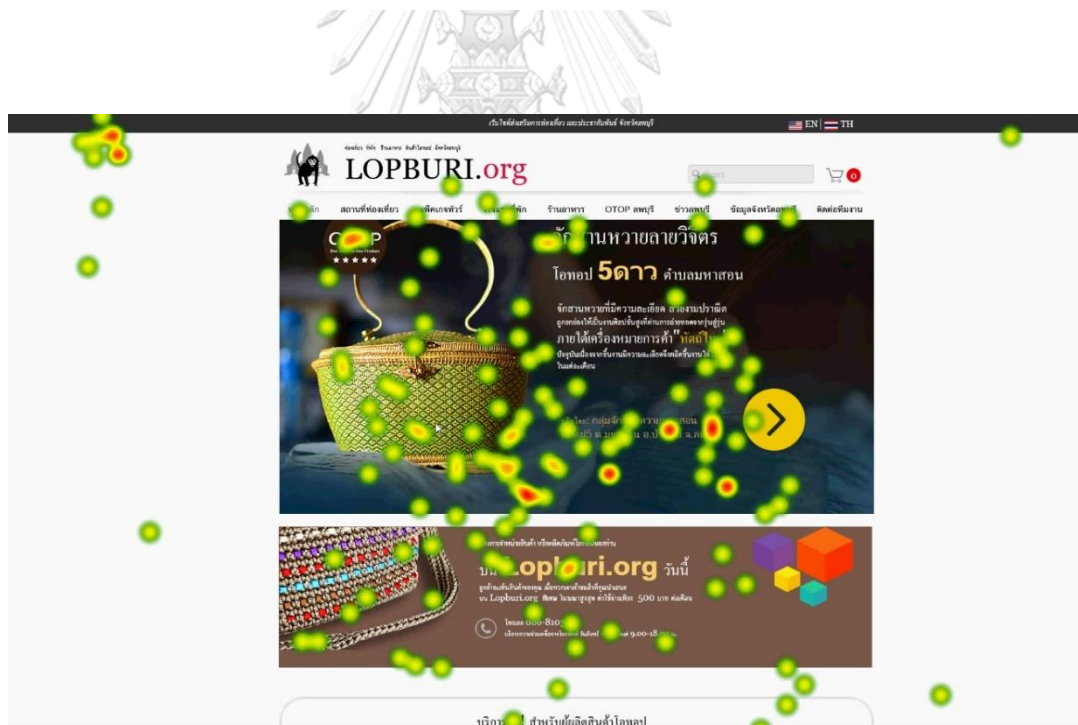


Figure 39. Second sampling journey from one of all participants who playing on OTOP official website (part 8 – by scrolling down the page from part 7)



Figure 40. Second sampling journey from one of all participants who playing on OTOP official website (part 9 – by scrolling down the page from part 8)



Figure 41. Second sampling journey from one of all participants who playing on OTOP official website (part 10 – by clicking “OTOP ลพบุรี” in the top navigation bar)



Figure 42. Second sampling journey from one of all participants who playing on OTOP official website (part 11 – by scrolling down the page from part 10)

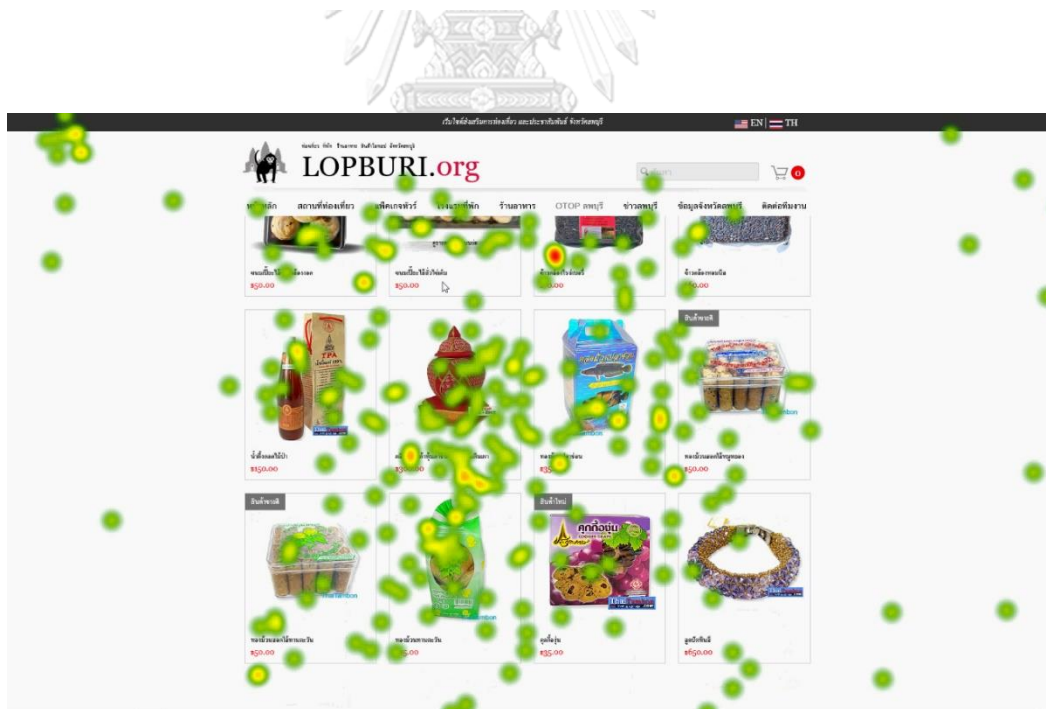


Figure 43. Second sampling journey from one of all participants who playing on OTOP official website (part 12 – by scrolling down the page from part 11)



Figure 44. Second sampling journey from one of all participants who playing on OTOP official website (part 13 – by scrolling down the page from part 12)



Figure 45. Second sampling journey from one of all participants who playing on OTOP official website (part 14 – by scrolling down the page from part 13)

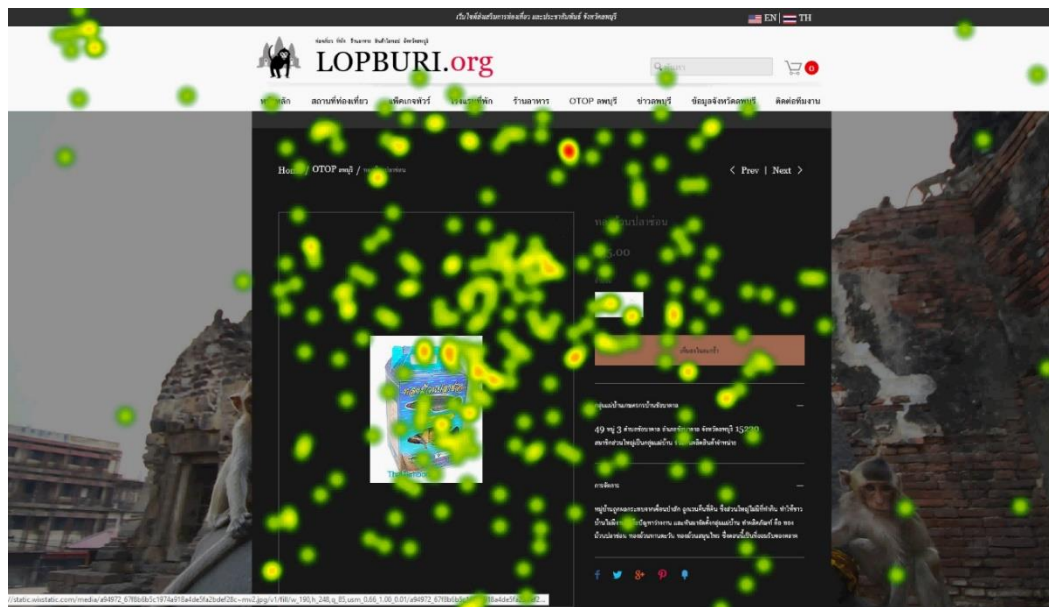


Figure 46. Second sampling journey from one of all participants who playing on OTOP official website (part 15 – by clicking on the product to see more information from part 14)



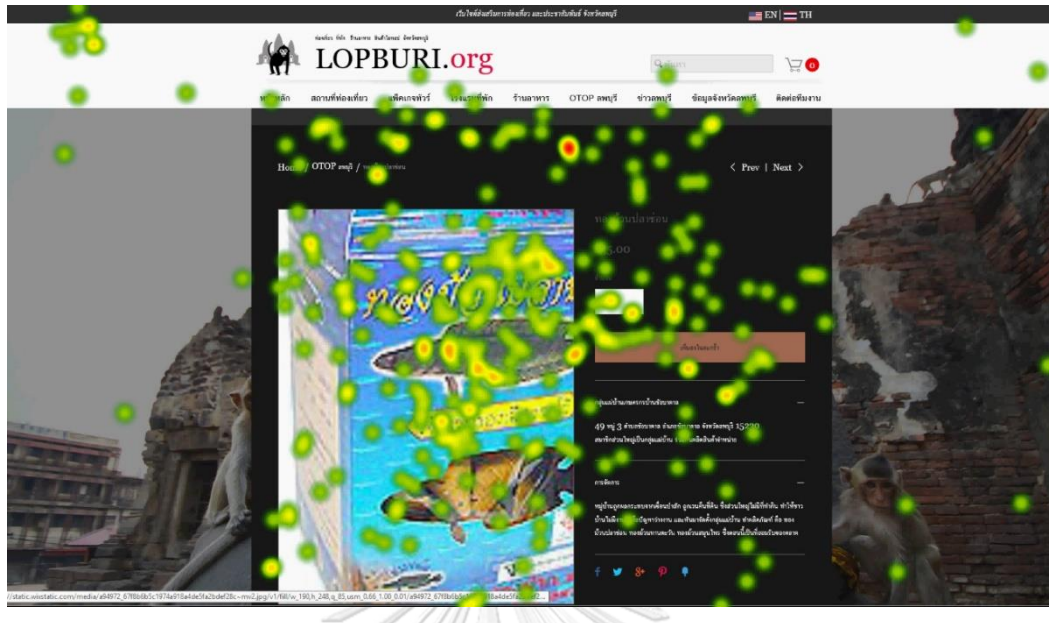


Figure 47. Second sampling journey from one of all participants who playing on OTOP official website (part 16 – by clicking and hold dragging to zoom in and zoom out the product picture)

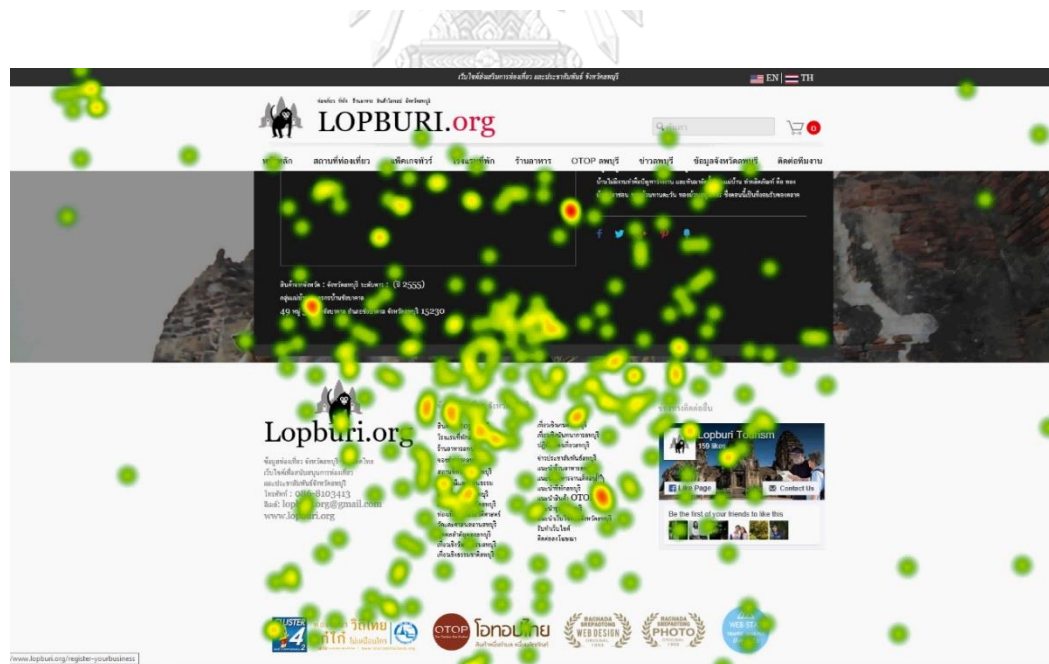


Figure 48. Second sampling journey from one of all participants who playing on OTOP official website (part 17 – by scrolling down the page from part 16)



Figure 49. Second sampling journey from one of all participants who playing on OTOP official website (part 18 – participant go back to shopping for more products)



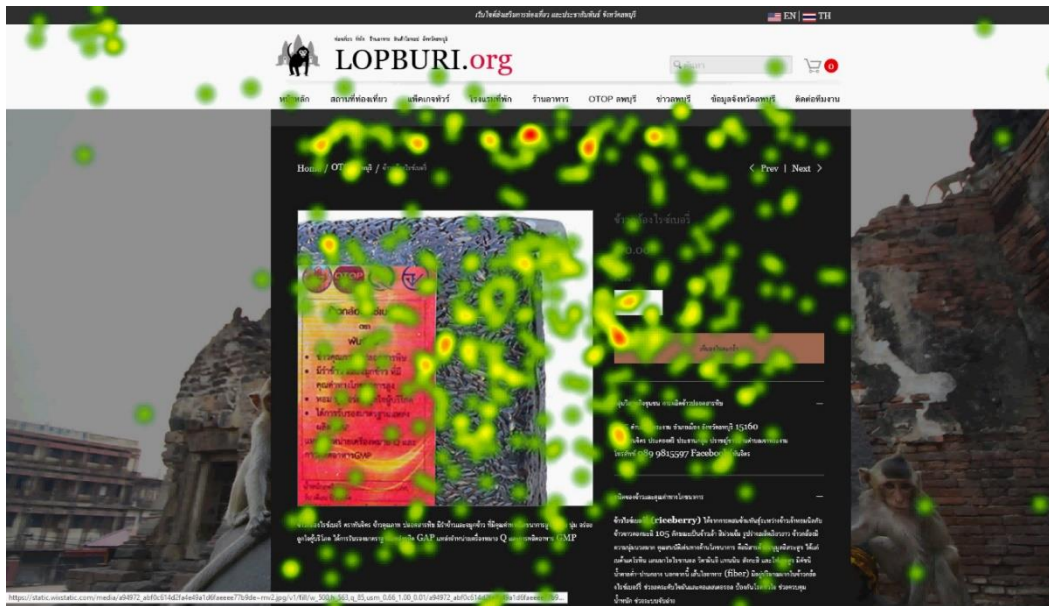


Figure 50. Second sampling journey from one of all participants who playing on OTOP official website (part 19 – participant selected product and zoom in to see the detail of product picture)

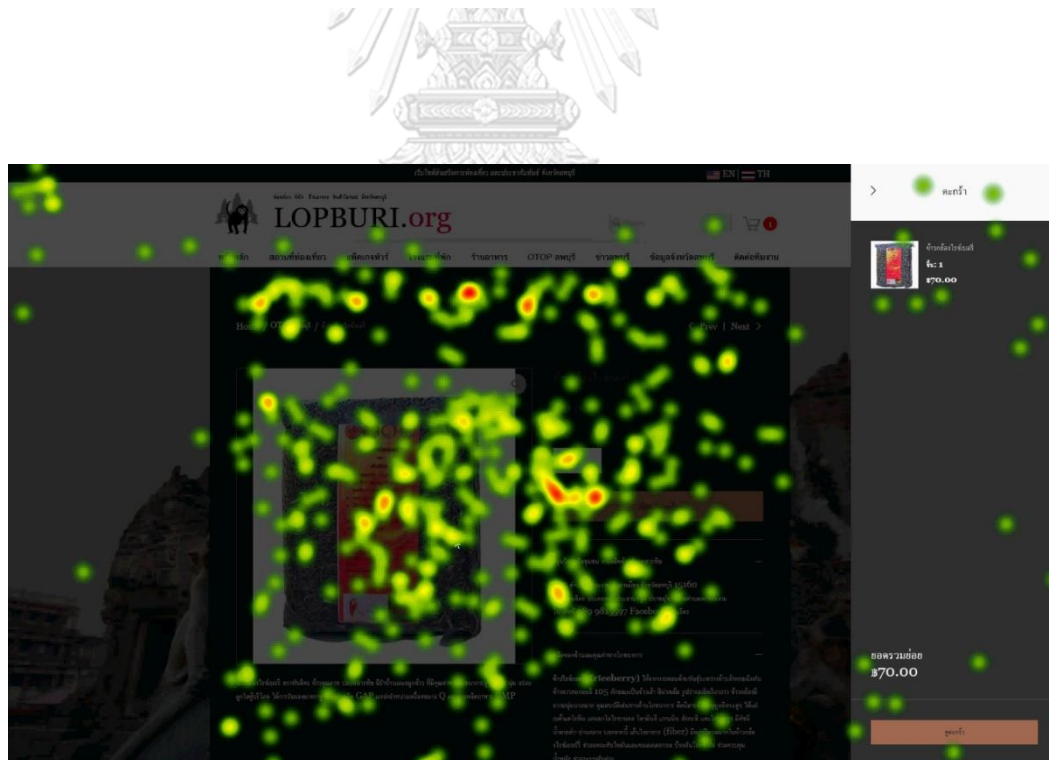


Figure 51. Second sampling journey from one of all participants who playing on OTOP official website (part 20 – user checked product list in shopping cart)

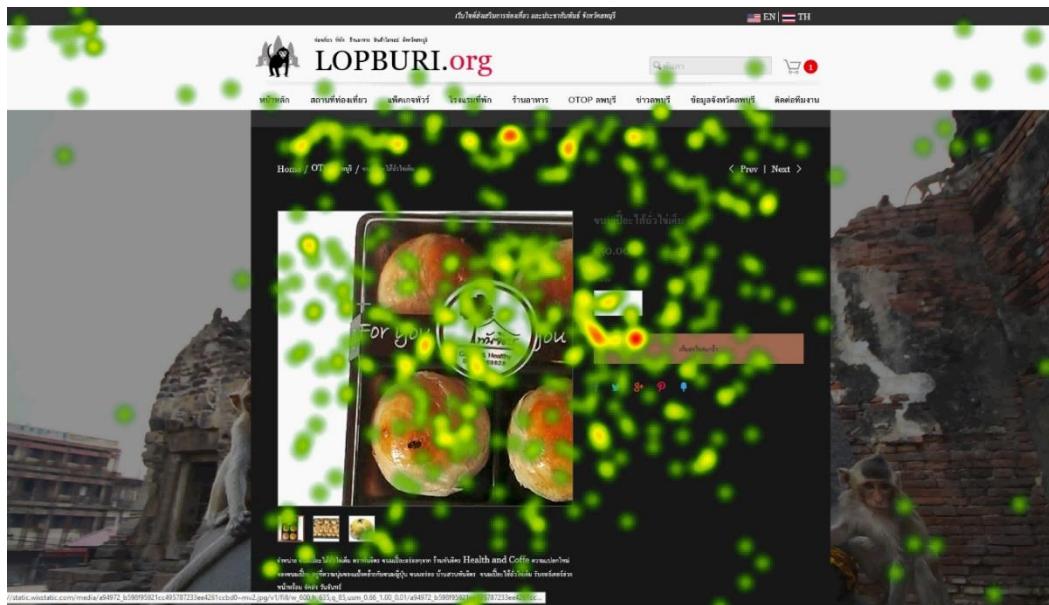


Figure 52. Second sampling journey from one of all participants who playing on OTOP official website (part 21 – user go back and continue shopping)

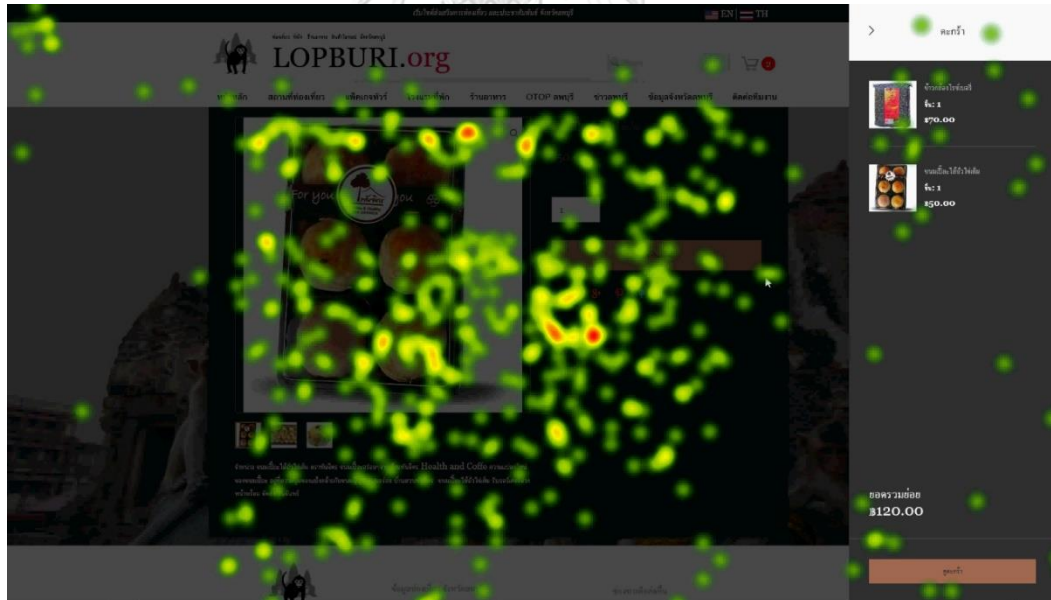


Figure 53. Second sampling journey from one of all participants who playing on OTOP official website (part 22 – user checked product list in shopping cart again)

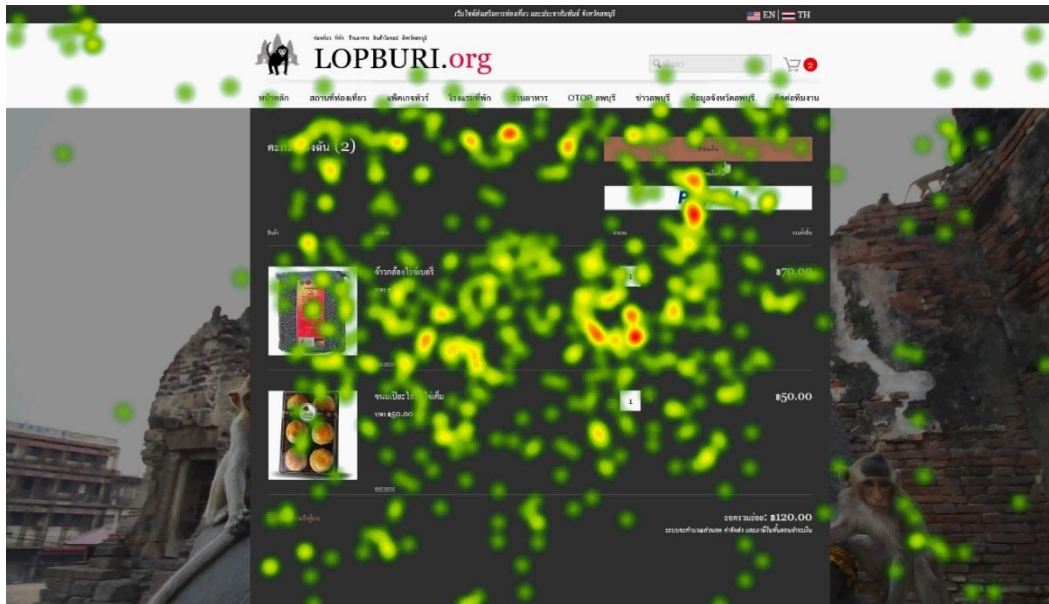


Figure 54. Second sampling journey from one of all participants who playing on OTOP official website (part 23 – user did the task)



Appendix C2: The third journey from the third participant who had been sampling from all 24 participants and had played an OTOP official website.

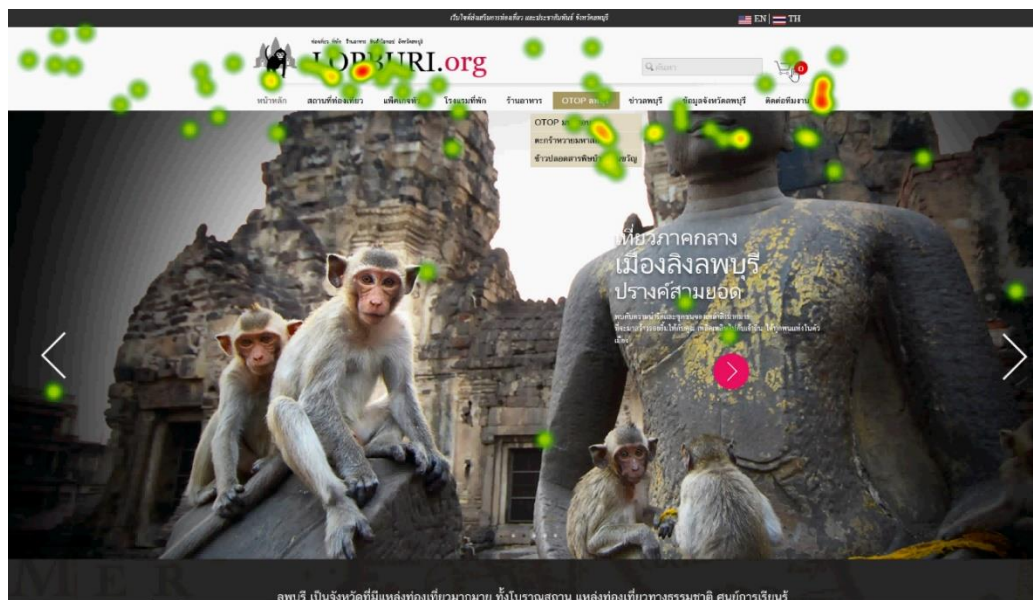


Figure 55. Third sampling journey from one of all participants who playing on OTOP official website (part 1)

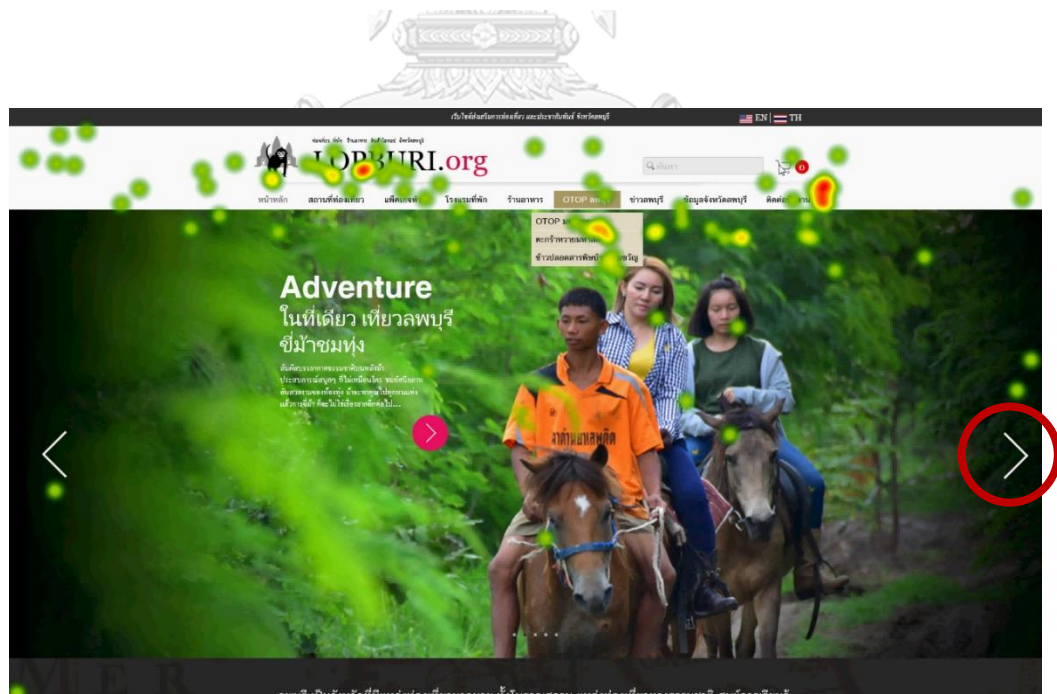


Figure 56. Third sampling journey from one of all participants who playing on OTOP official website (part 2 – user clicking on the arrow button in red circle)

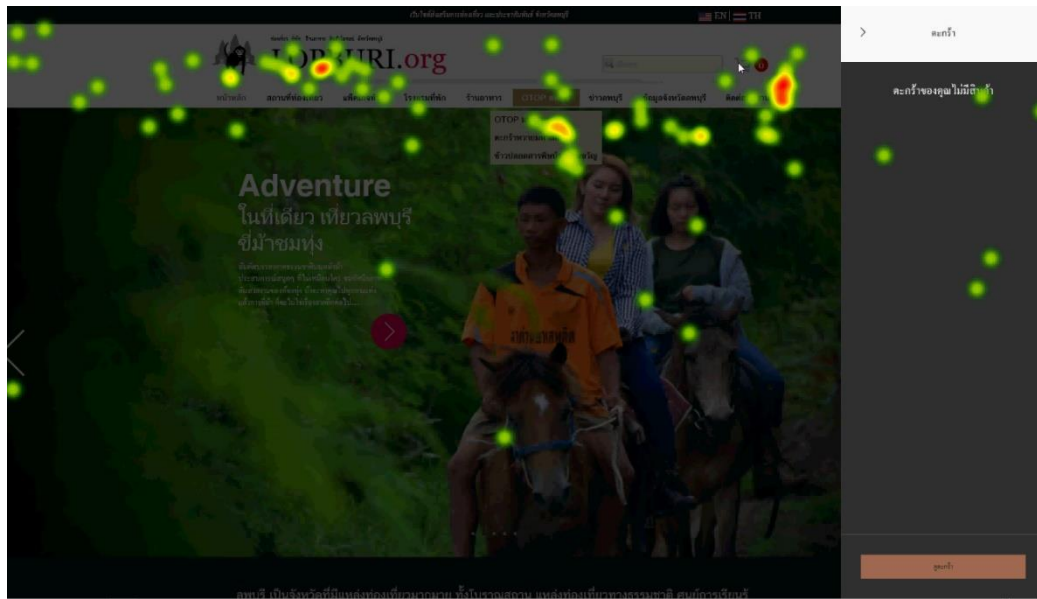


Figure 57. Third sampling journey from one of all participants who playing on OTOB official website (part 3 – user observed the shopping cart)



Figure 58. Third sampling journey from one of all participants who playing on OTOB official website (part 4 – user close the shopping cart and scroll down the page from part 2)

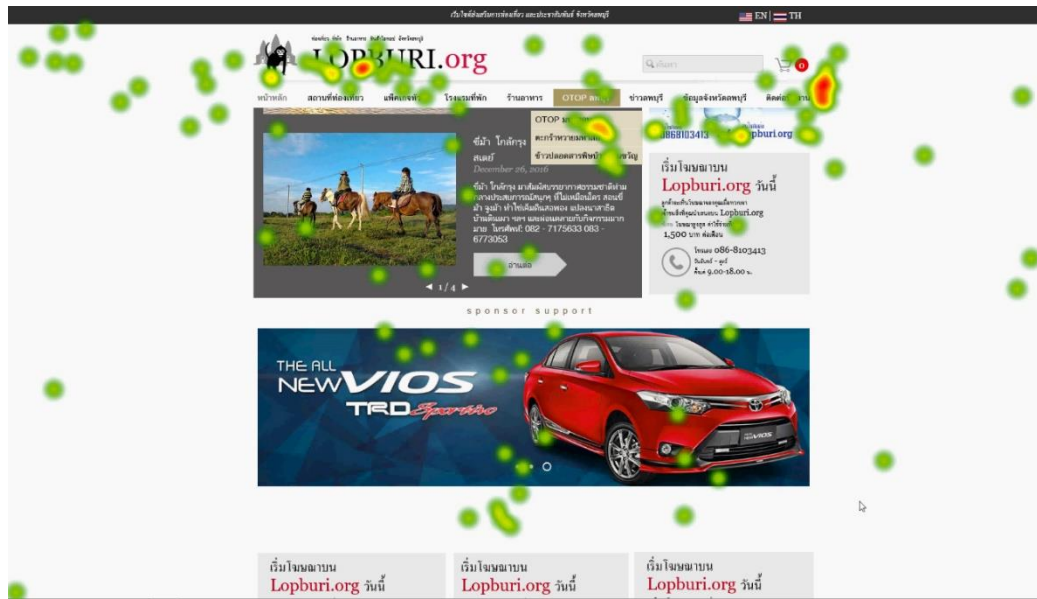


Figure 59. Third sampling journey from one of all participants who playing on OTOP official website (part 5 – user scroll down the page from part 4)

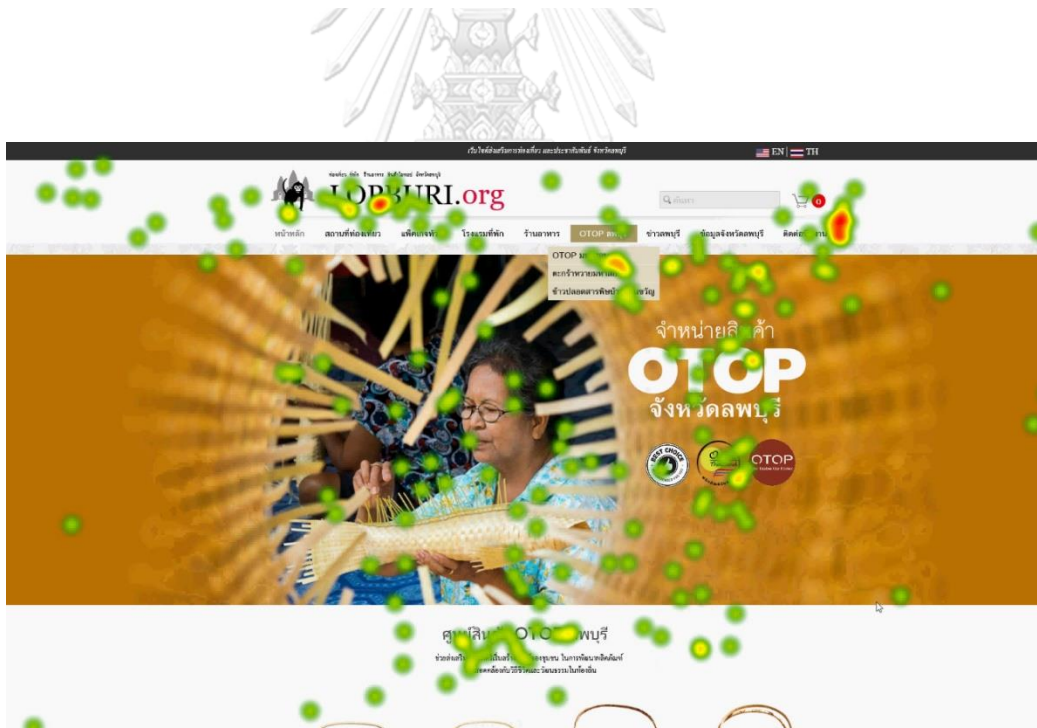


Figure 60. Third sampling journey from one of all participants who playing on OTOP official website (part 6 – user scroll down the page from part 5)



Figure 61. Third sampling journey from one of all participants who playing on OTOP official website (part 7 – user scroll down the page from part 6)

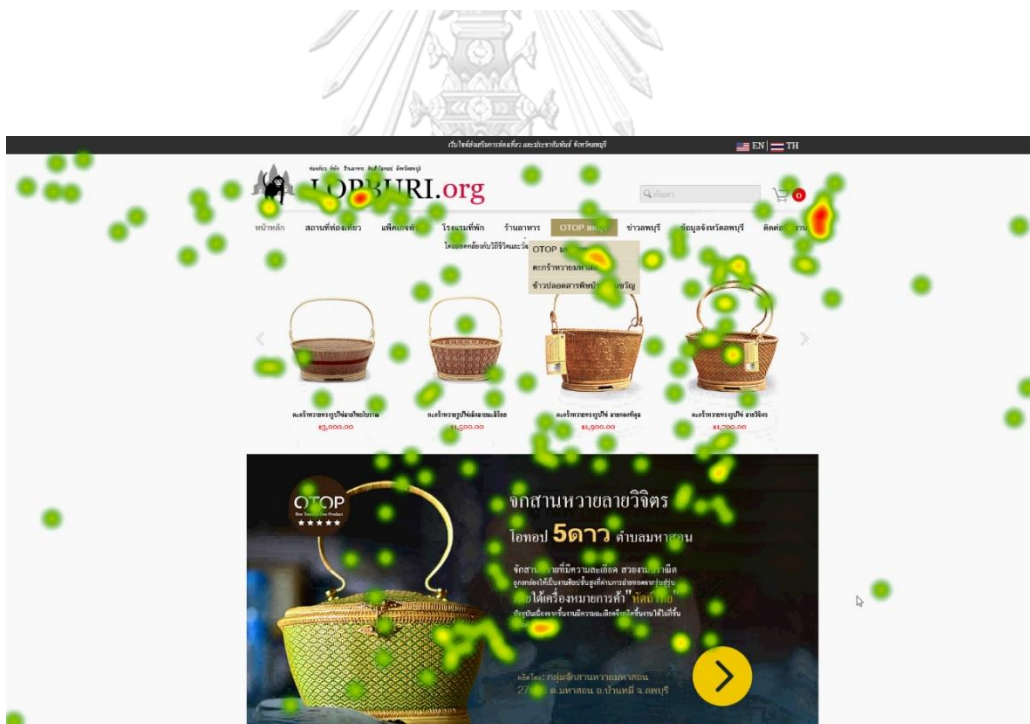


Figure 62. Third sampling journey from one of all participants who playing on OTOP official website (part 8 – user scroll down the page from part 7)

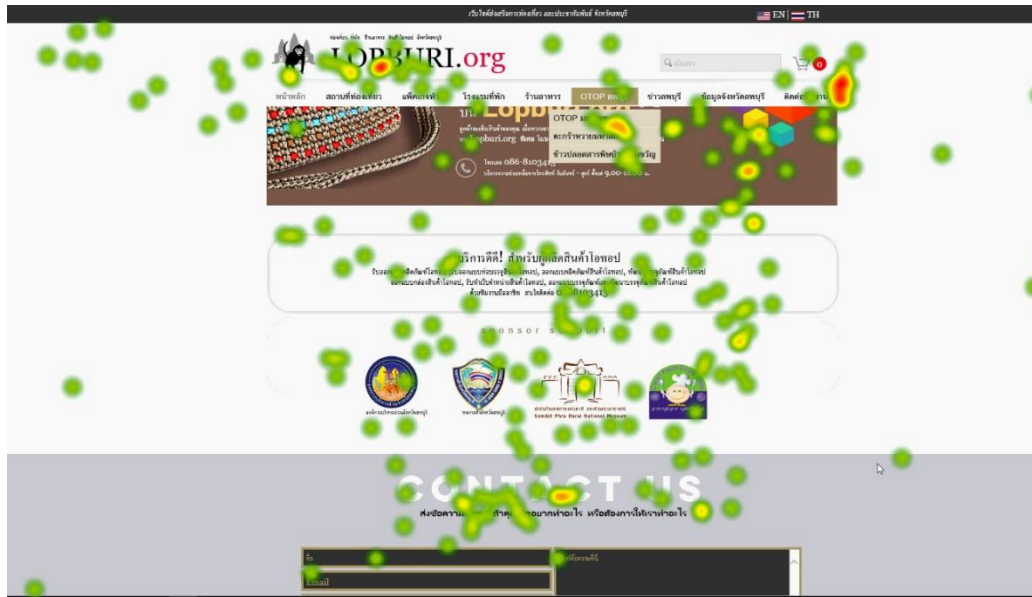


Figure 63. Third sampling journey from one of all participants who playing on OTOP official website (part 9 – user scroll down the page from part 8)

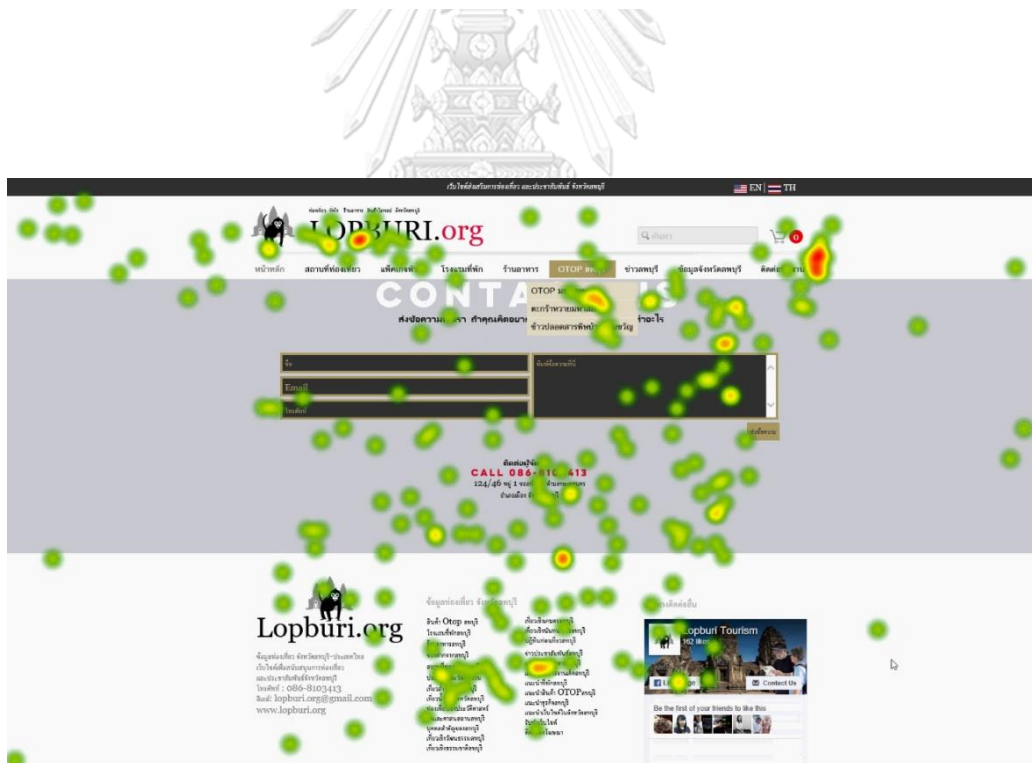


Figure 64. Third sampling journey from one of all participants who playing on OTOP official website (part 10 – user scroll down the page from part 9)

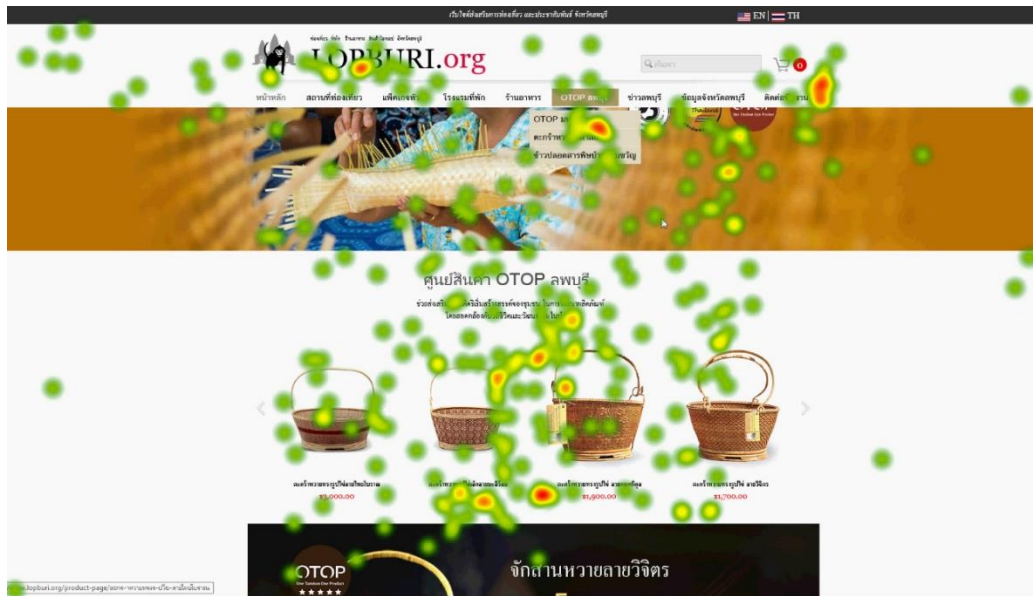


Figure 65. Third sampling journey from one of all participants who playing on OTOB official website (part 11 – user scroll up the page from part 10)

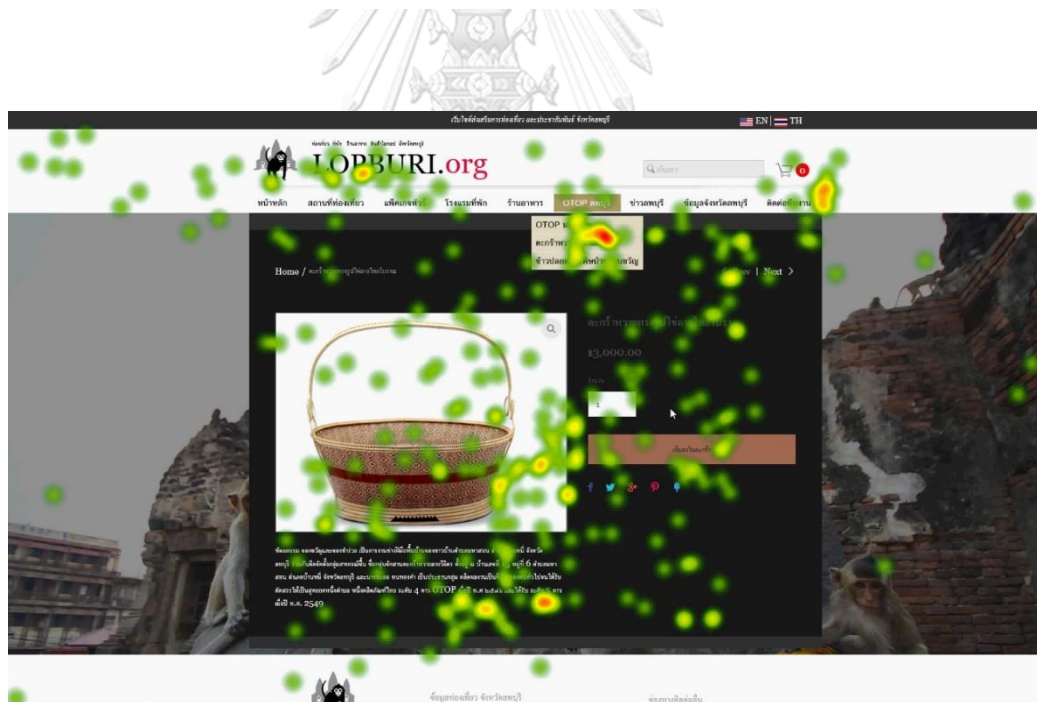


Figure 66. Third sampling journey from one of all participants who playing on OTOB official website (part 12 – user chose the product and click on product picture to see more information)



Figure 67. Third sampling journey from one of all participants who playing on OTOB official website (part 13 – user scroll down the page from part 12)

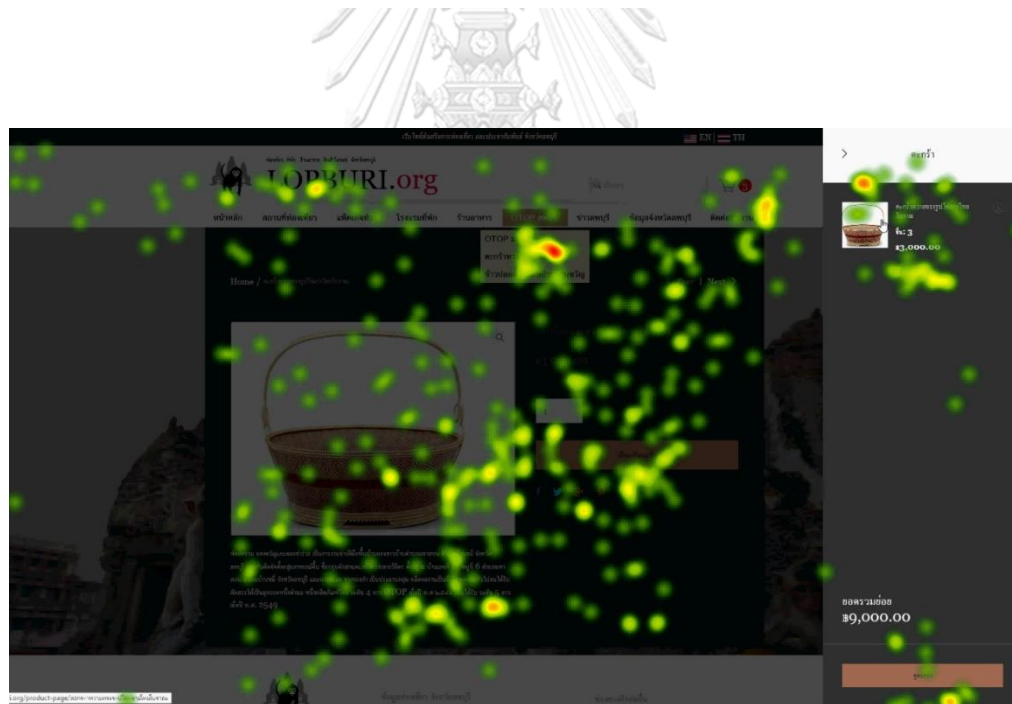


Figure 68. Third sampling journey from one of all participants who playing on OTOB official website (part 14 – user checked on the shopping cart after they put the product into the cart)



Figure 69. Third sampling journey from one of all participants who playing on OTOB official website (part 15 – user did the task)



Appendix D: A sample of Heatmap on social media of Lopburi official website



Figure 70. Heatmap on social media from first participant's eye movement tracking

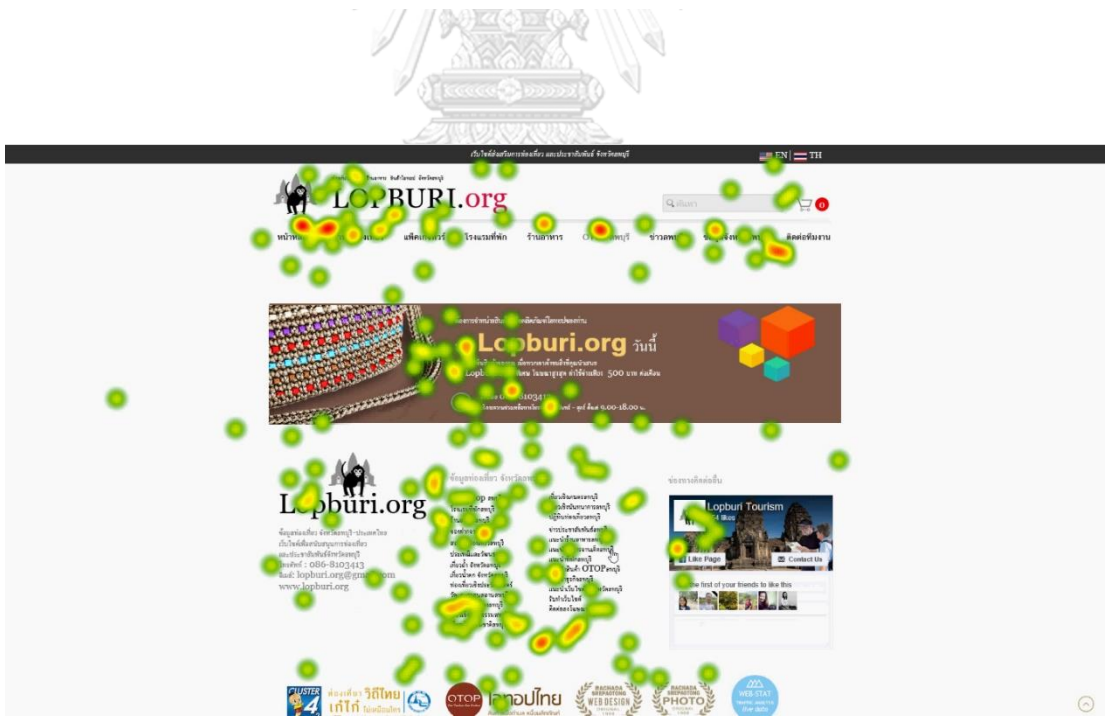


Figure 71. Heatmap on social media from second participant's eye movement tracking



Figure 72. Heatmap on social media from third participant's eye movement tracking

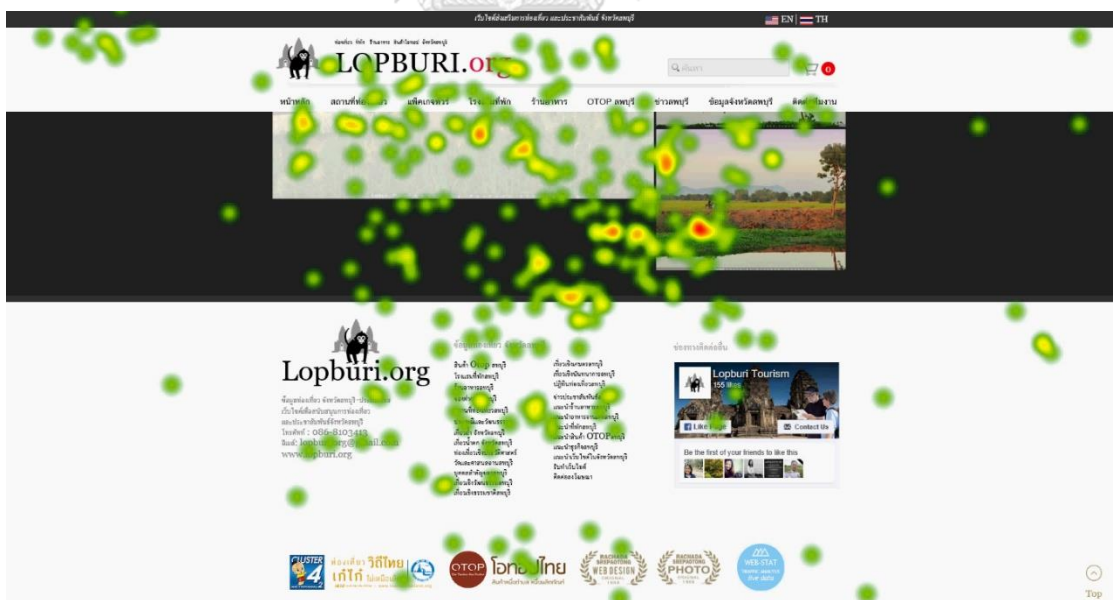


Figure 73. Heatmap on social media from fourth participant's eye movement tracking



Figure 76. Heatmap on social media from seventh participant's eye movement tracking



Figure 77. Heatmap on social media from eighth participant's eye movement tracking

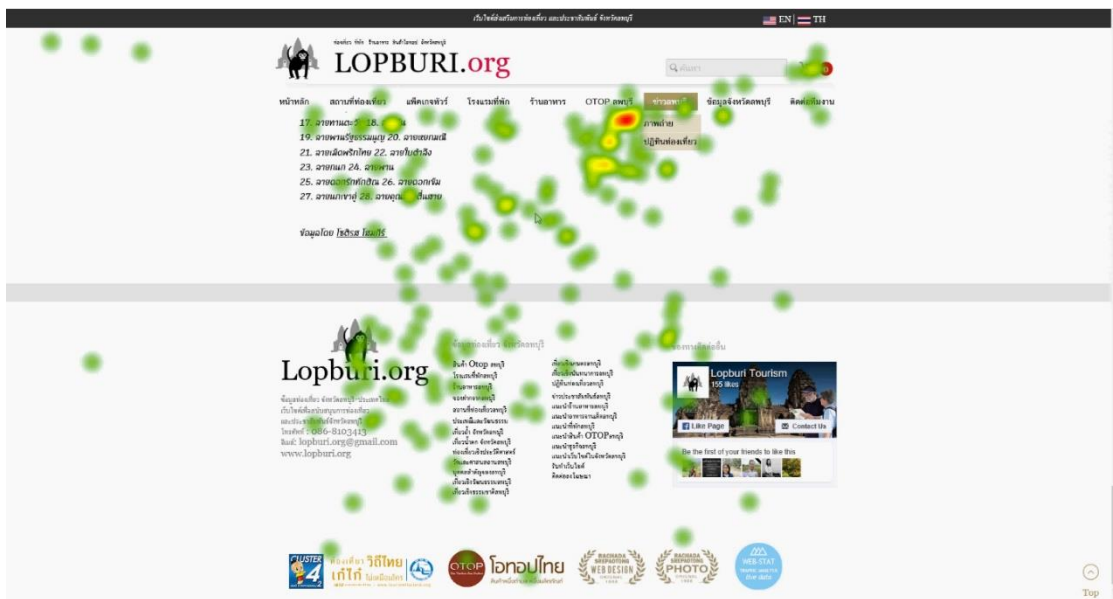


Figure 78. Heatmap on social media from ninth participant's eye movement tracking

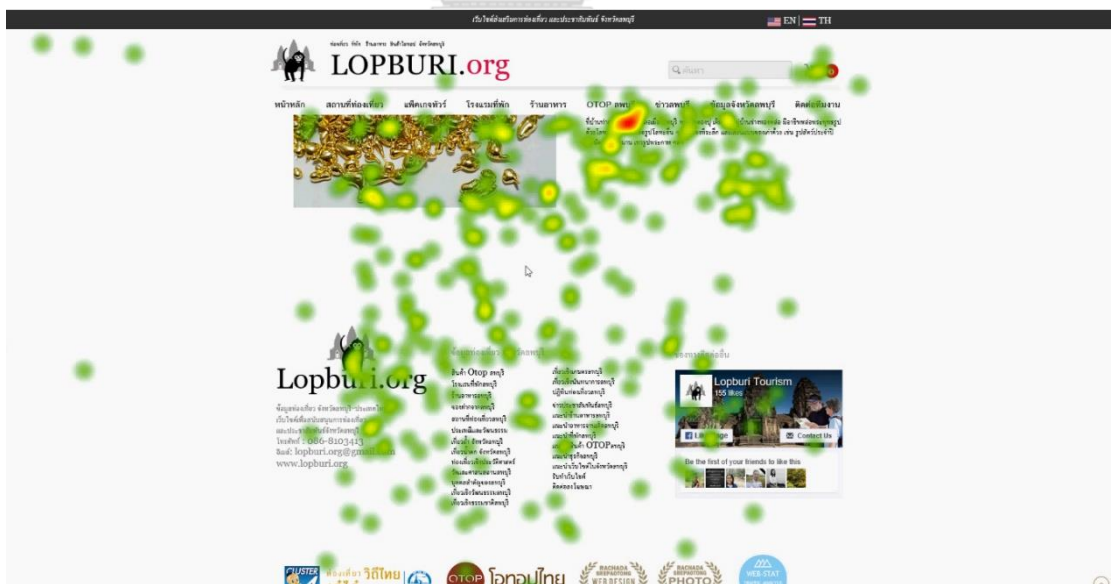


Figure 79. Heatmap on social media from tenth participant's eye movement tracking



Figure 80. Heatmap on social media from eleventh participant's eye movement tracking



Figure 81. Heatmap on social media from twelfth participant's eye movement tracking



Figure 82. Heatmap on social media from thirteenth participant's eye movement tracking

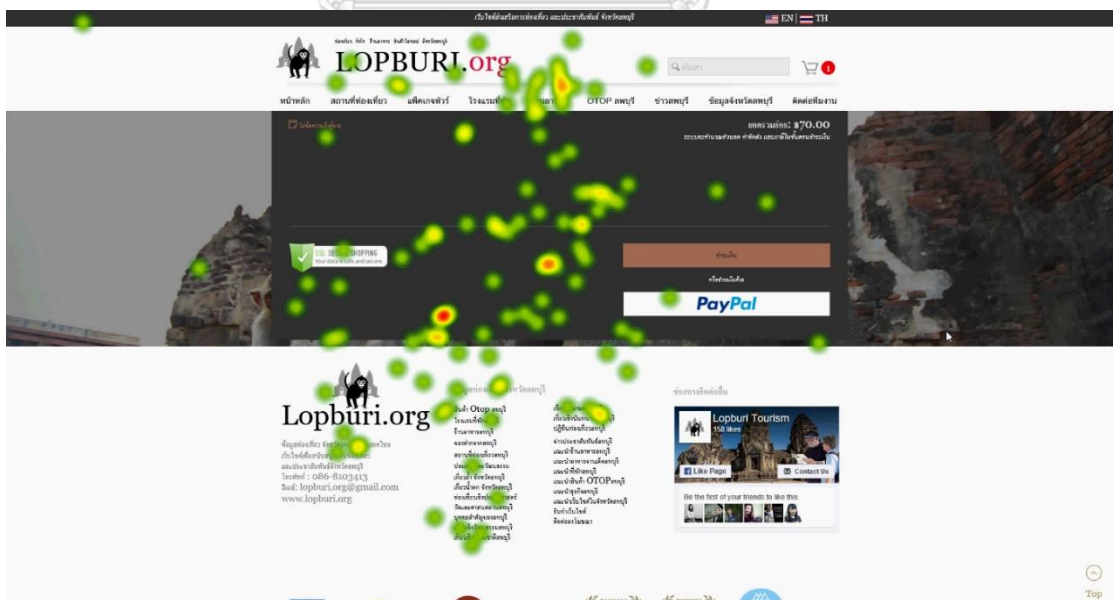


Figure 83. Heatmap on social media from fourteenth participant's eye movement tracking



Figure 84. Heatmap on social media from fifteenth participant's eye movement tracking

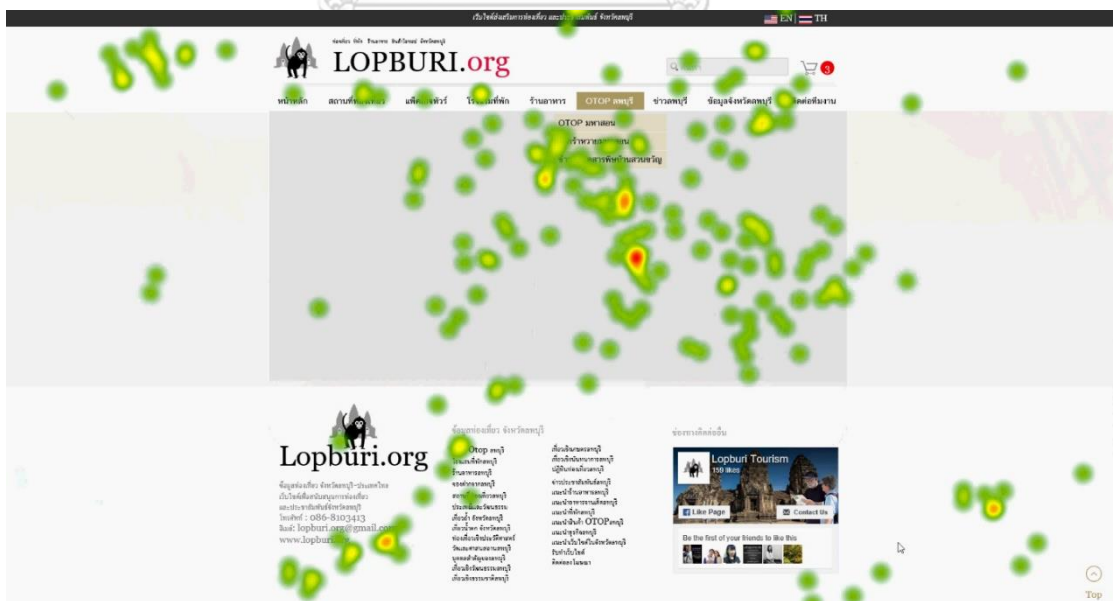


Figure 85. Heatmap on social media from sixteenth participant's eye movement tracking



Figure 86. Heatmap on social media from seventeenth participant's eye movement tracking



Figure 87. Heatmap on social media from eighteenth participant's eye movement tracking

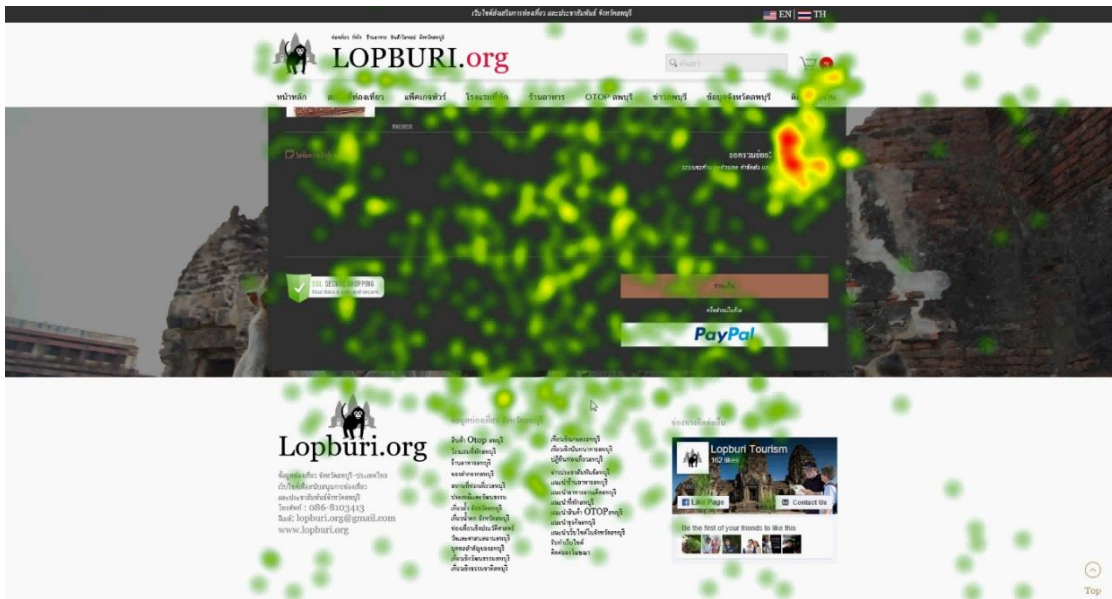


Figure 88. Heatmap on social media from nineteenth participant's eye movement tracking



Figure 89. Heatmap on social media from twentieth participant's eye movement tracking

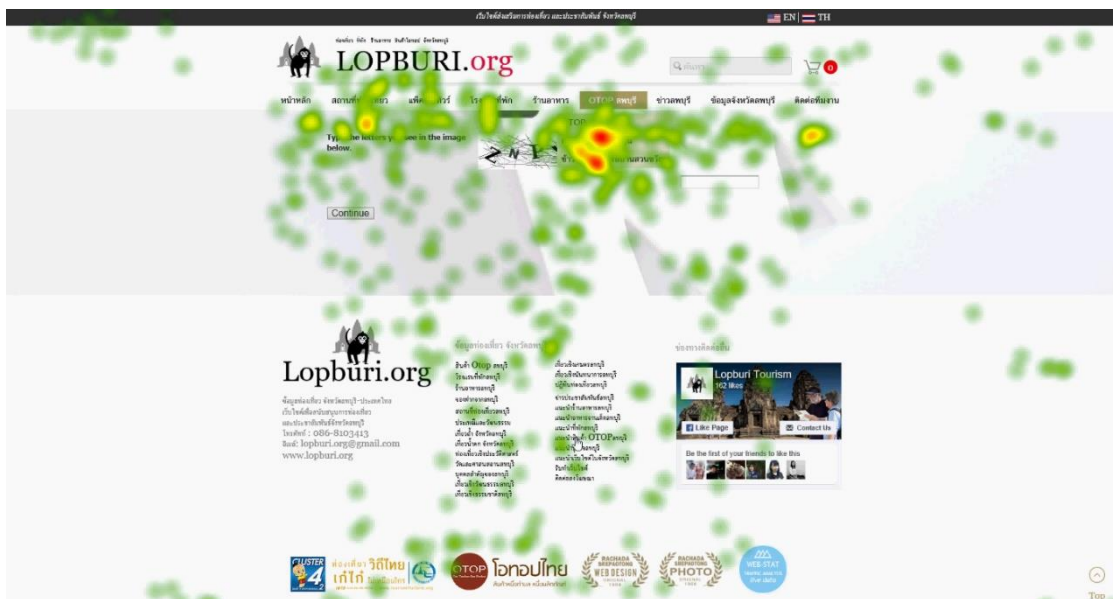


Figure 90. Heatmap on social media from twenty-first participant's eye movement tracking



Figure 91. Heatmap on social media from twenty-second participant's eye movement tracking



Figure 92. Heatmap on social media from twenty-third participant's eye movement tracking

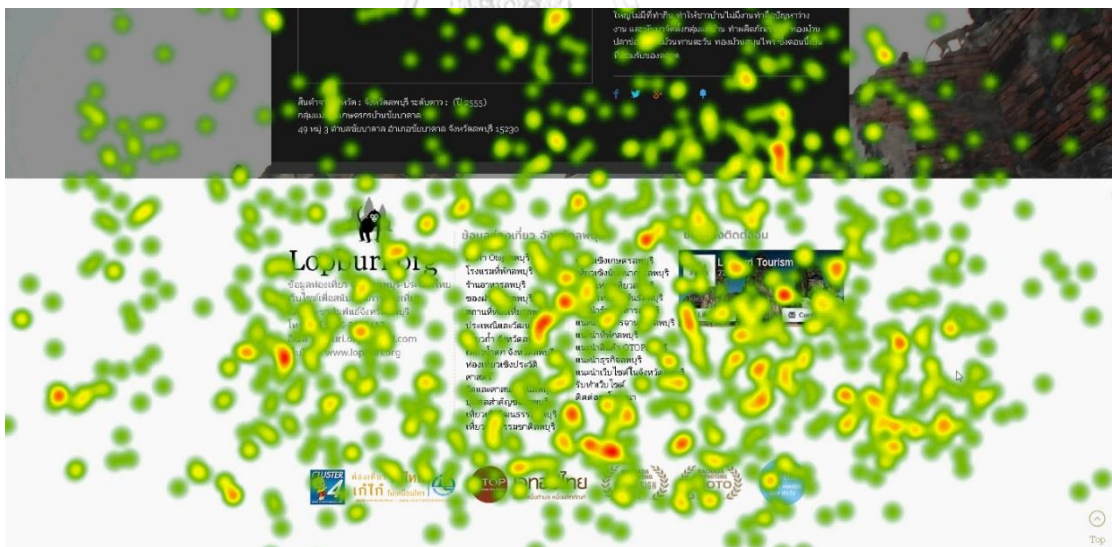


Figure 93. Heatmap on social media from twenty-fourth participant's eye movement tracking

Appendix E: A sample of an existing and popular e-Commerce website in Thailand

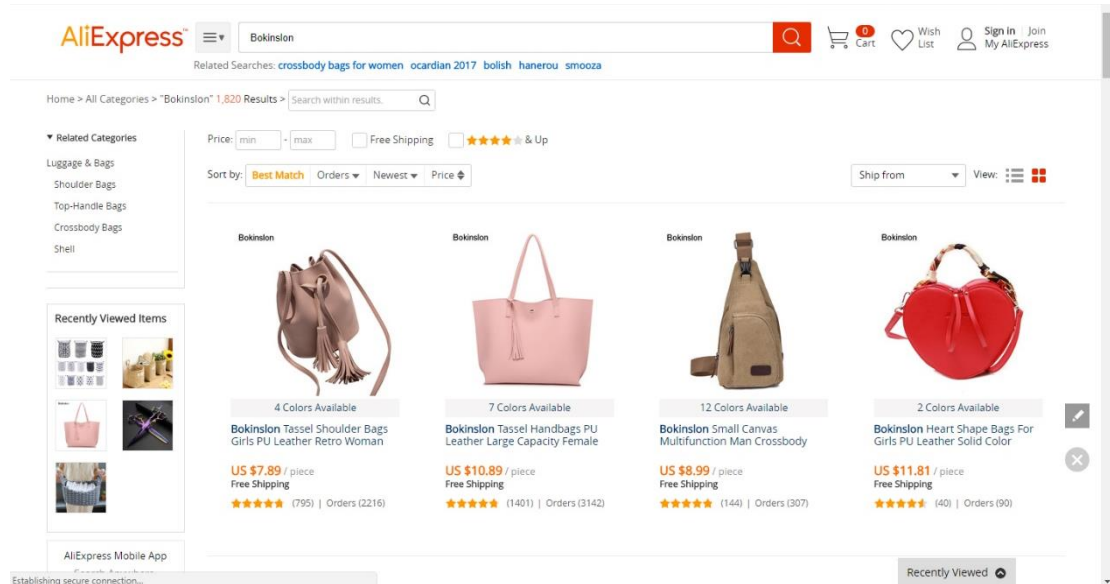


Figure 94. An overall product display for ordering from AliExpress.com website with shows some basic information and rating. (Bags category sample)

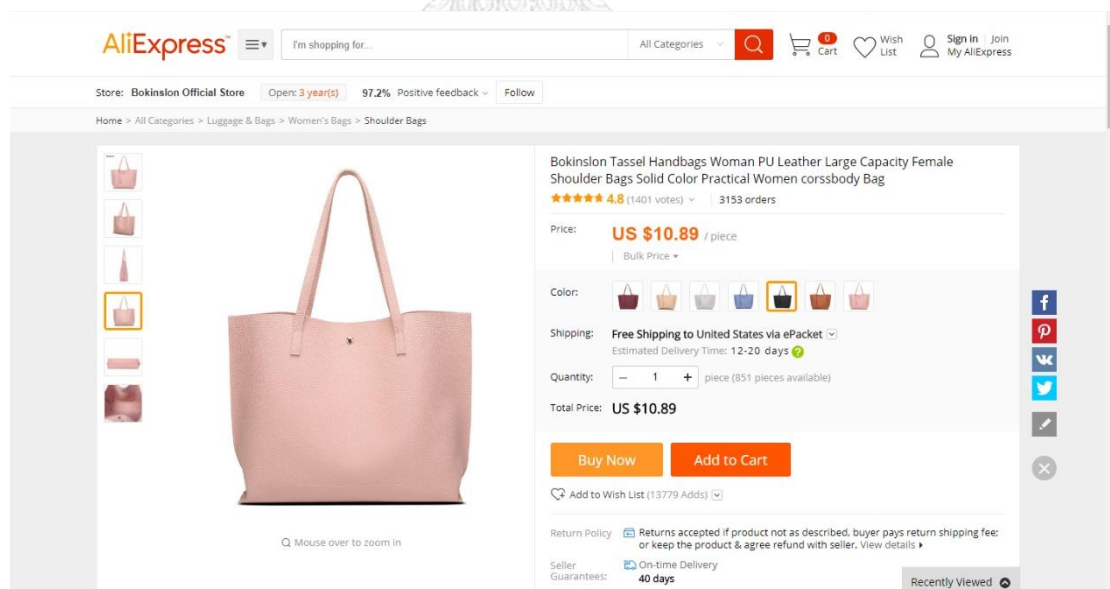


Figure 95. An AliExpress.com website show product information, photos, prices, product option, shipping details, and ordering details after choosing the product

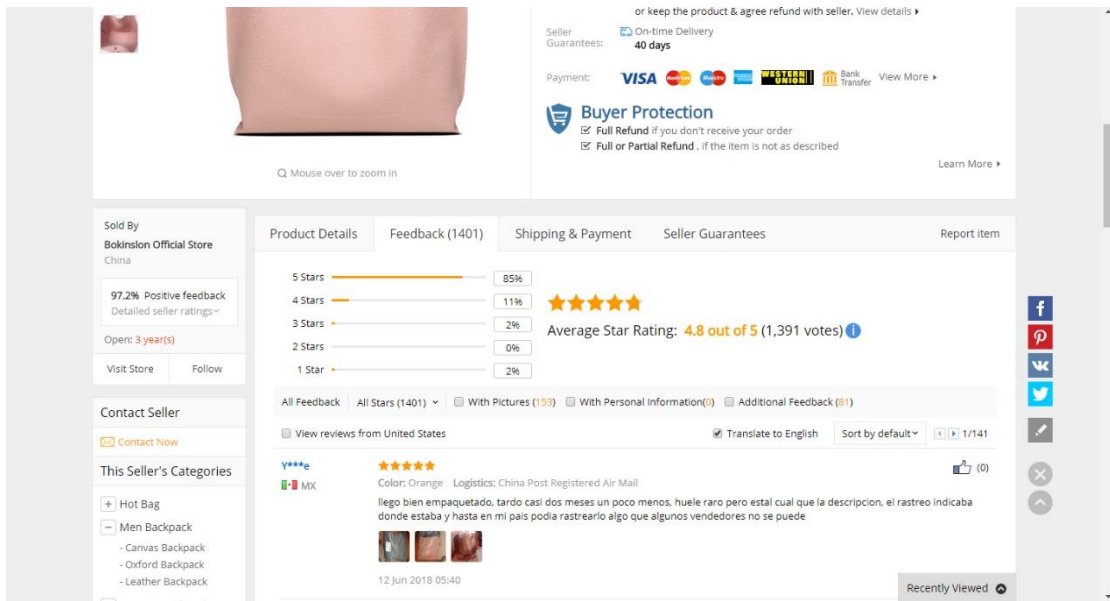


Figure 96. Feedback section from customer's using experiences on the product (AliExpress.com website)

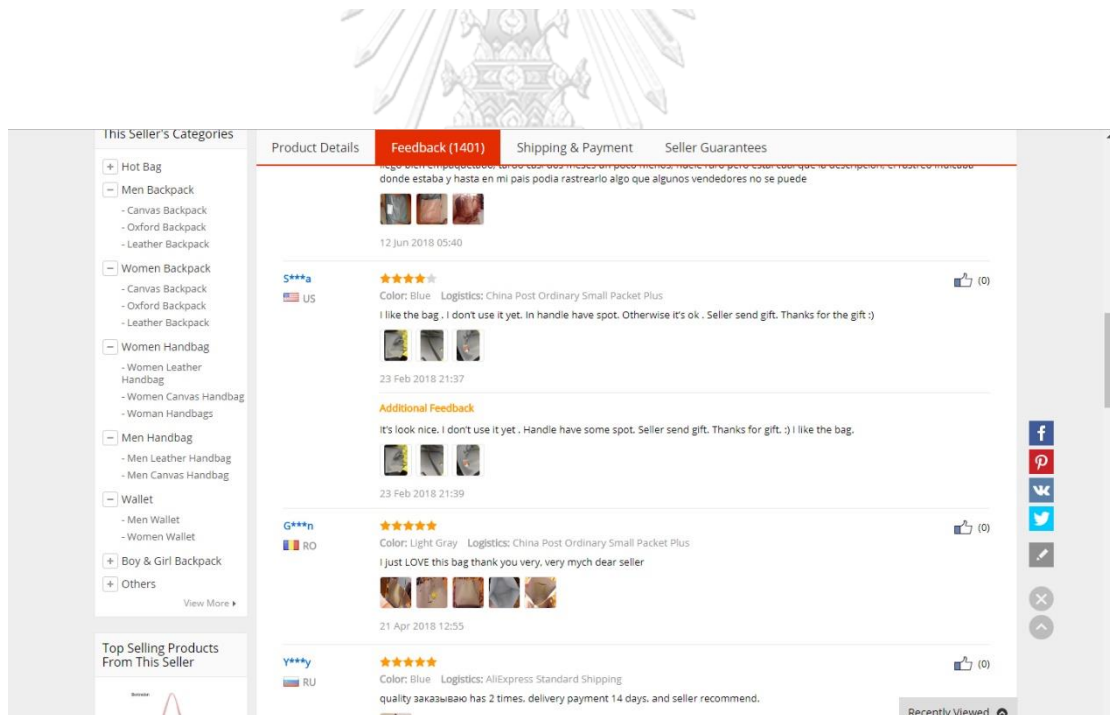


Figure 97. Customer reviews or comments showing in the feedback section of AliExpress.com website

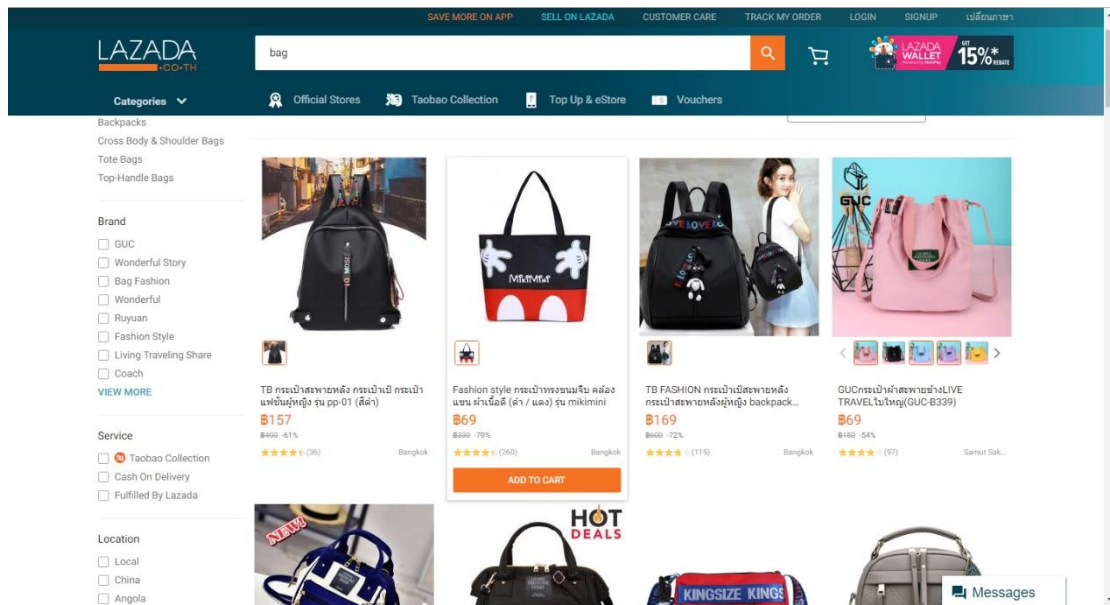


Figure 98. An overall product display for ordering from Lazada.com website with shows some basic information and rating. (Bags category sample)

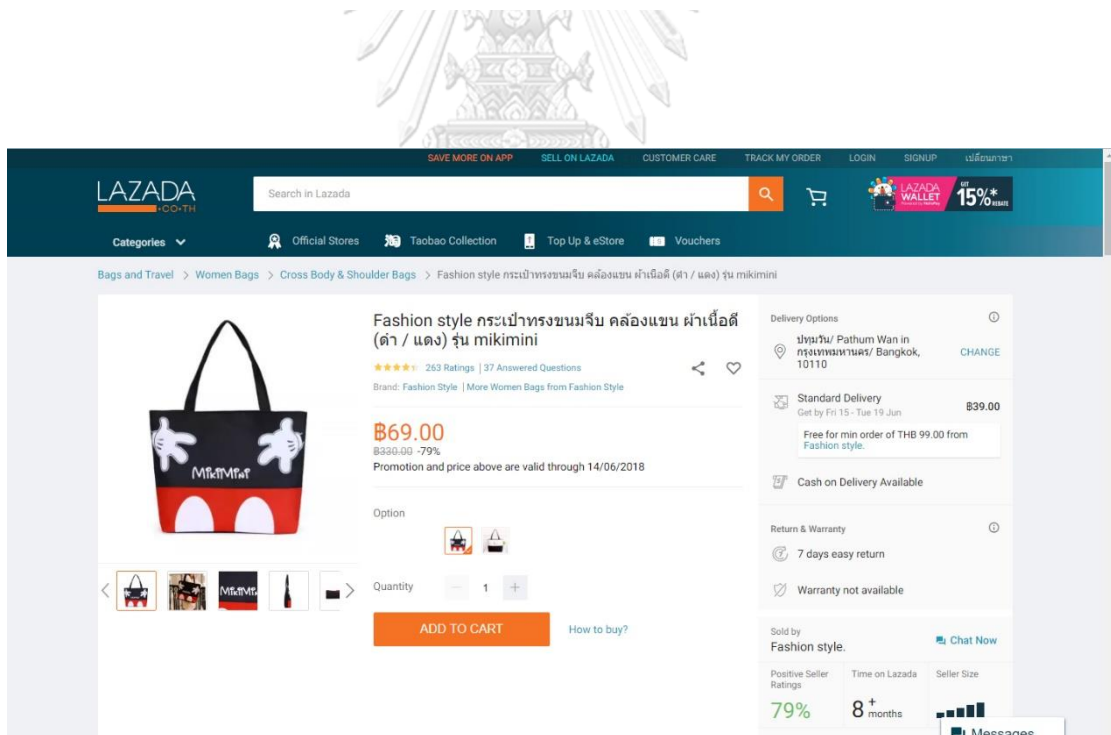


Figure 99. A Lazada.com website show product information, photos, prices, product option, shipping details, ordering details, and also seller details after choosing the product

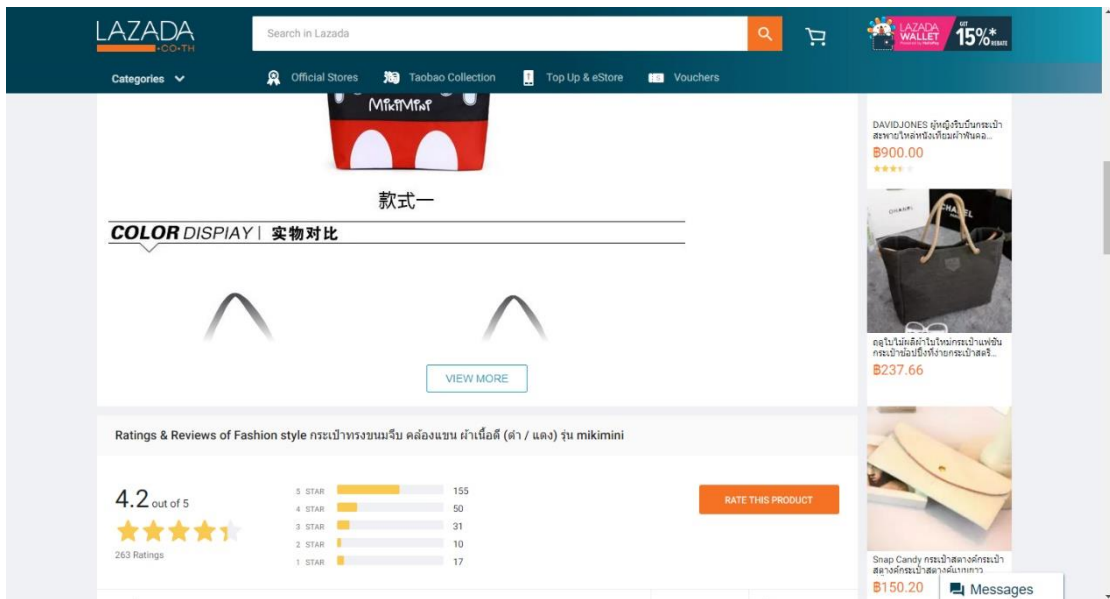


Figure 100. Ratings and Reviews section from customer usage experiences of the product from Lazada.com website

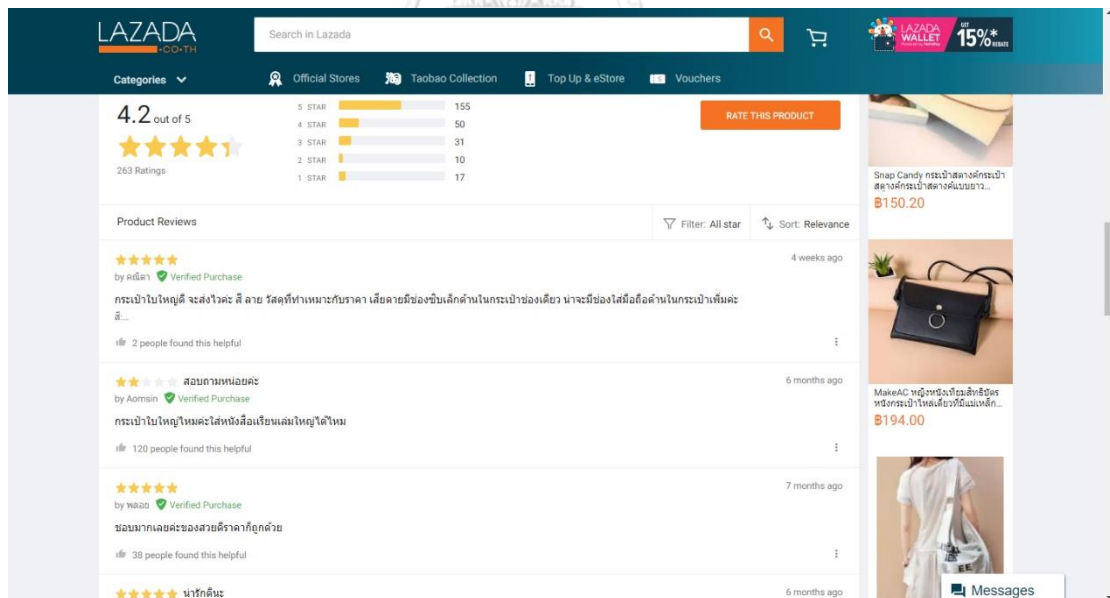


Figure 101. A sample of product reviews from each customer of Lazada.com website

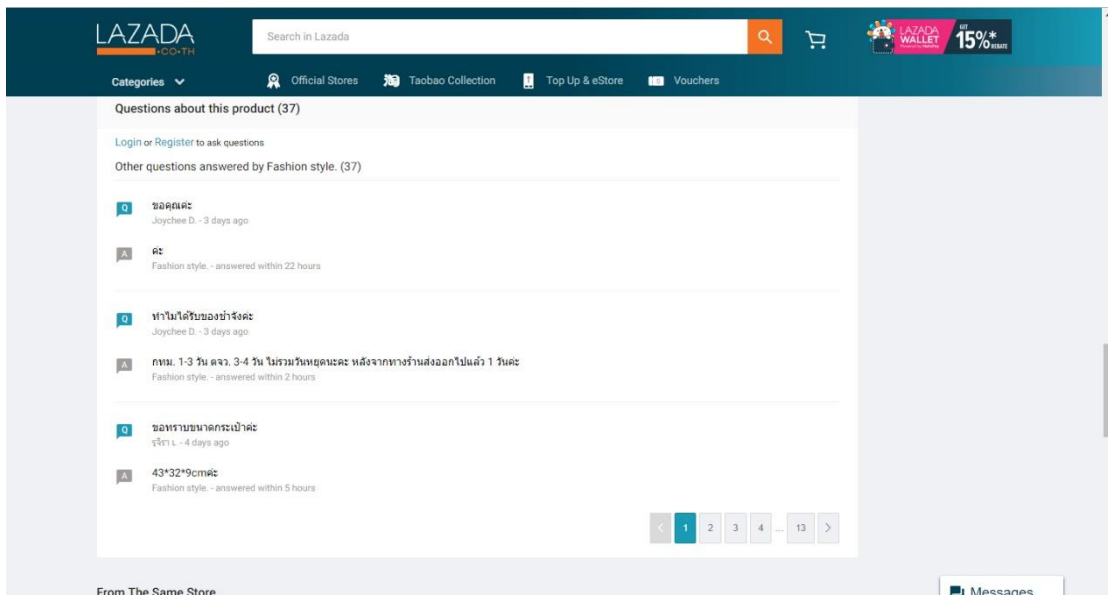


Figure 102. Questions about the product section of Lazada.com which let users ask about what they have suspect on the product

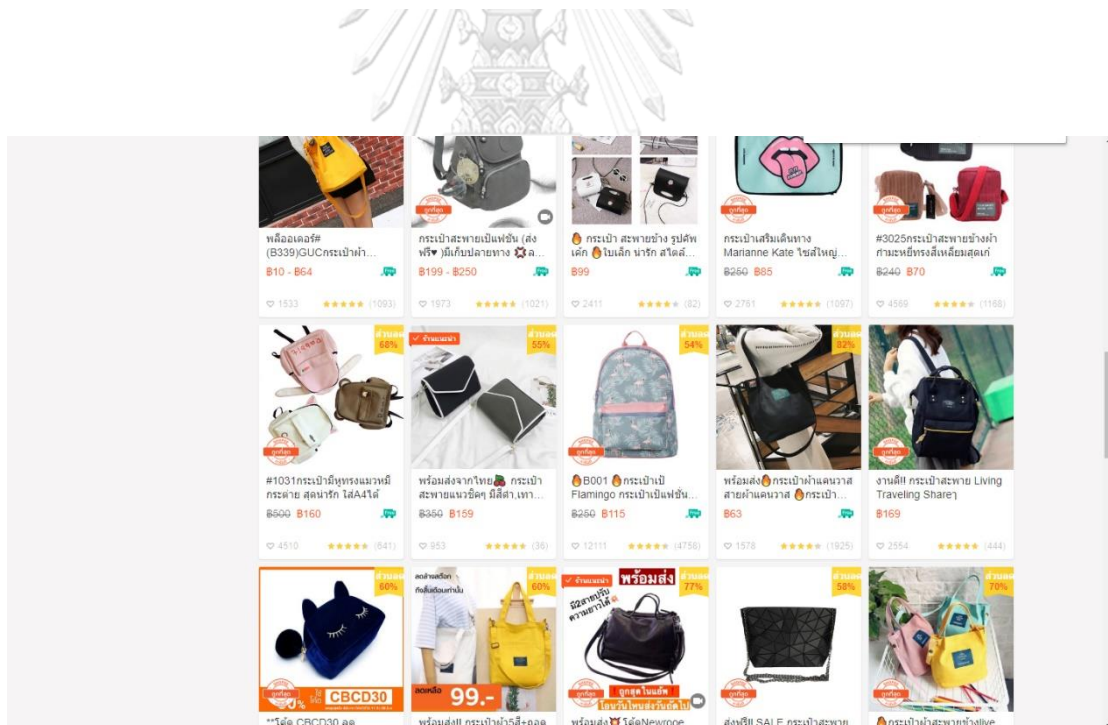


Figure 103. An overall product display for ordering from Shopee.com website with shows some basic information and rating. (Bags category sample)

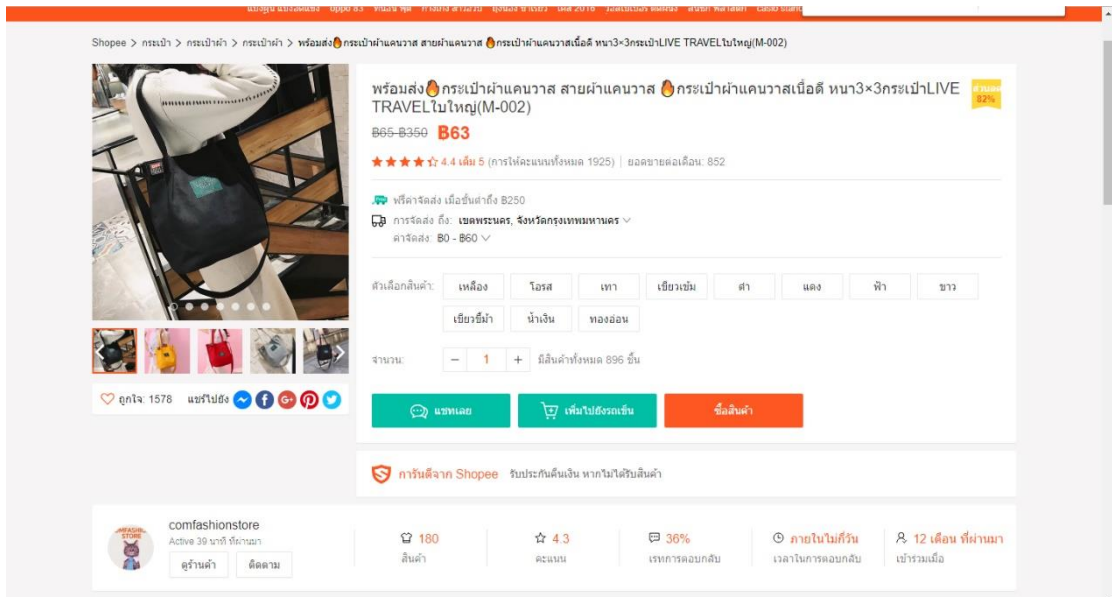


Figure 104. Shopee.com website show product information, photos, prices, a product option, and ordering details after choosing the product

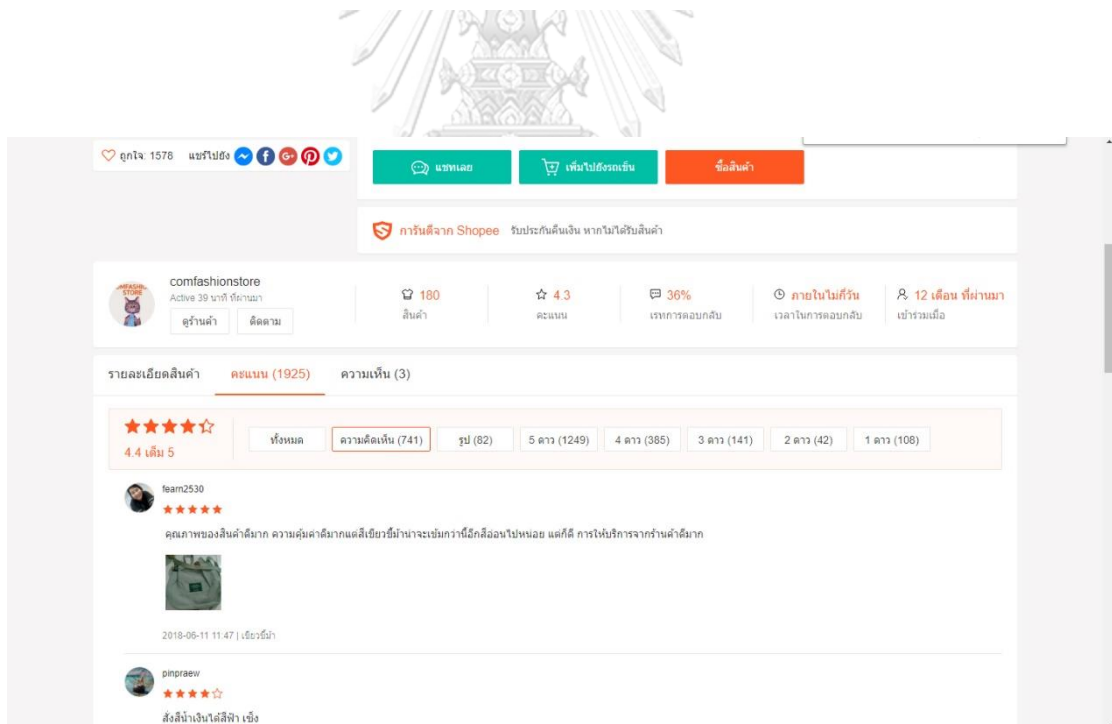


Figure 105. Product reviews/comments and rating score from each customer of Shopee.com website

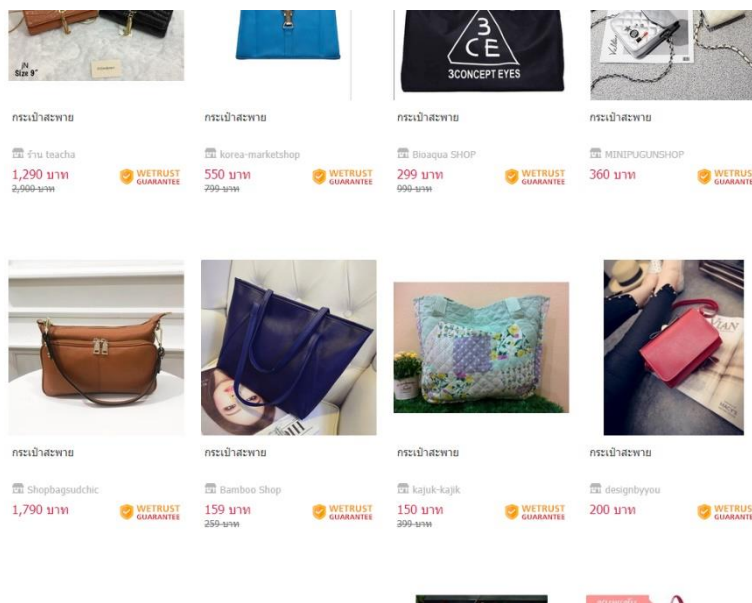


Figure 106. An overall product display for ordering from Weloveshopping.com website with shows some basic information. (Bags category sample)

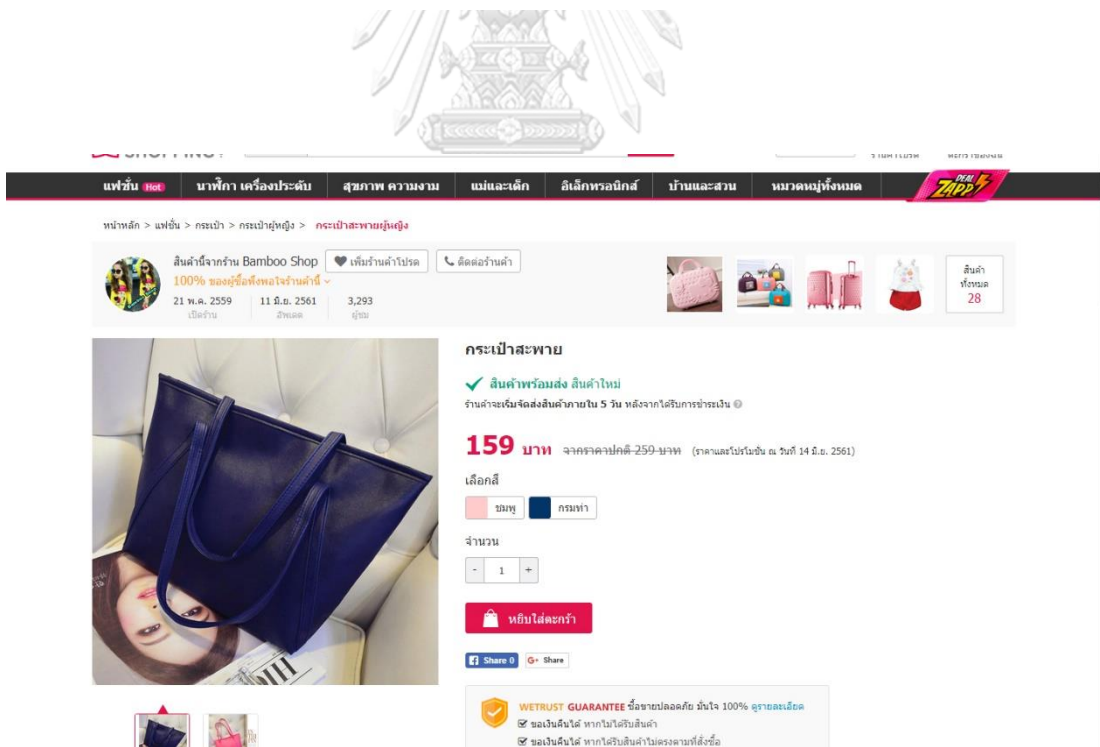


Figure 107. Weloveshopping.com website show product information, photos, prices, a product option, product status, shipping details, and ordering details after choosing the product

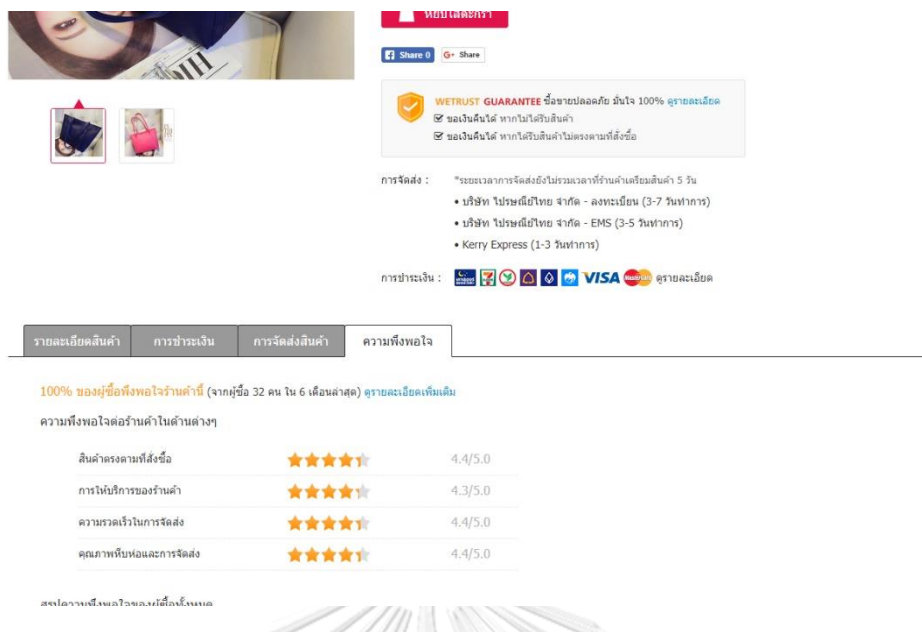


Figure 108. Rating score of customer satisfaction in each aspect of the product on Weloveshopping.com website

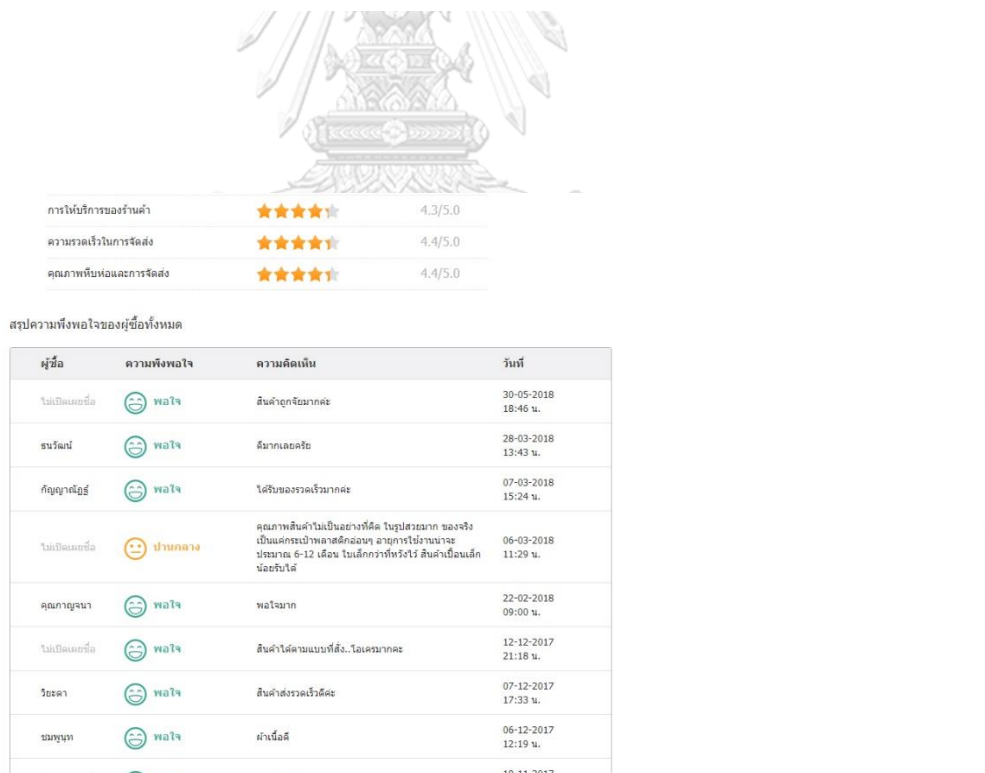


Figure 109. Summarize detail of all customer satisfaction of product on Weloveshopping.com website

Appendix F: Proposed rough ideas about some features that would be a challenge to the further work for better design on official OTOP website in Thailand

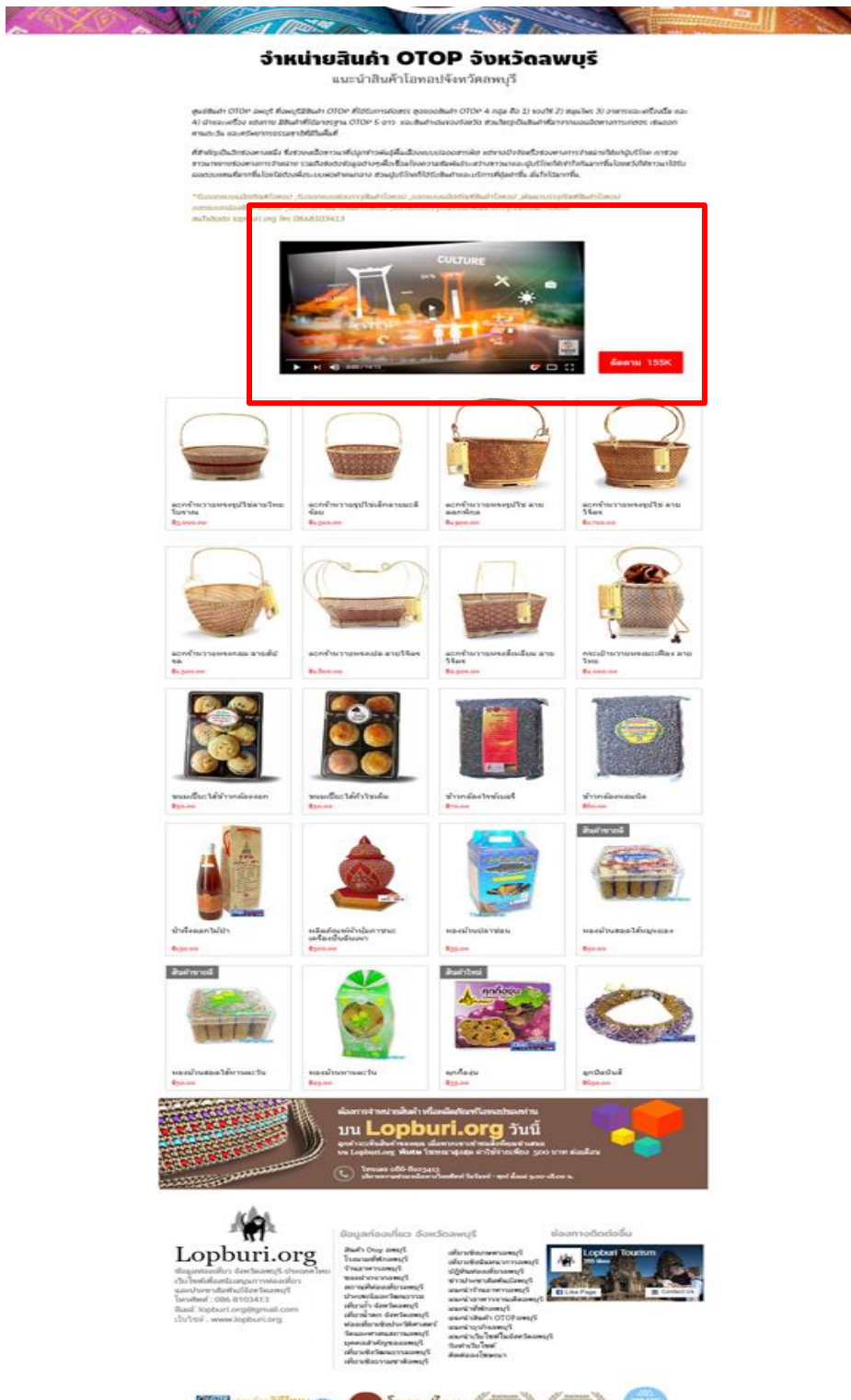


Figure 110. A Rough idea of putting videos or images movement to show the production processes on sample website (Lopburi.org)

VITA

Name: Krittika Akasarakul (Min)

Telephone: (+66) 63 374 5553, (+66) 87 356 5091

Email: Krittika.Ak@student.chula.ac.th, Krittika.a@hotmail.com

Affiliation: Machine Intelligence and Multimedia Information Technology (MIMIT) Laboratory, Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University.

Country: Thailand

Biography: Miss Krittika Akasarakul was born on January 15, 1993, in Bangkok province, Thailand. She received a Bachelor's degree in Food Technology from Chulalongkorn University. Now she is a Master's degree student in Computer Science and Information Technology, Department of Mathematics and Computer Science, Faculty of Science, Chulalongkorn University.



จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY