

Impact of Google's Augmented Reality Try-On in Bangladesh

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This Report Presented in Partial Fulfillment of the Requirements for
The Degree of Masters of Science in Computer Science and Engineering

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DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

July 2024

APPROVAL

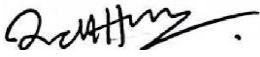
This Project titled “**Impact of Google’s Augmented Reality Try-On in Bangladesh**”, submitted by **Navilur Rahman Talukder** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering (MSc.) and approved as to its style and contents. The presentation has been held on **July 2024**.

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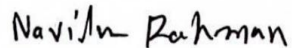
We hereby declare that, this thesis has been done by us under the supervision of **Professor Dr. Md. Ismail Jabiullah, Professor, Department of CSE** Daffodil International University. We also declare that neither this thesis nor any part of this thesis has been submitted elsewhere for award of any degree or diploma.

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ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final thesis successfully.

We really grateful and wish our profound our indebtedness to **Professor Dr. Md. Ismail Jabiullah**, Professor & Head of Exam Control, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “Data Mining” to carry out this thesis. His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this thesis.

We would like to express our heartiest gratitude to **Dr. Sheak Rashed Haider Noori, PhD, Professor and Head, Department of CSE**, for his kind help to finish our thesis and also to other faculty members and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and passion of our parents.

ABSTRACT

Google Try-On introduced by Google as an AR technology allow users, to virtually put on products before actually buying them. This research examines the possibilities, opportunities and issues of implementing Google Try-On in Bangladeshi e-commerce industry. The technology deploys computer vision algorithms and real-time rendering to impose the holograms of the products on the live videos shot by the users' devices to present a unique shopping experience. Hence, the study seeks to determine Google Try-On's influence and contribution to change in e-shopping for buying clothes in Bangladesh in terms of its consumer adoption, sales, and conversion rates, users' satisfaction, and conclusion for e-shopping firms. To collect information from the consumers and the professionals who work in the e-commerce business, the surveys, interviews, and case studies were conducted where in the collected data were analyzed by employing all sorts of statistical and qualitative analysis. Thus, the advantages of utilizing Google Try-On are improved visualization of the product, reduced rates of product returns, and increased rates of sales. It also includes customer attraction and enhances the shopping experience to give a different leaning to electronic business organizations. But it can face some threats as well It is for example possible to face some privacy concerns or data security threats or limitations in technology or cultural barriers to implementing this strategy. Of course, it also reveals possible negative effects of e-commerce on some traditional retail fields and points out technical issues as several issues. Of course, it is possible to name such limitations within a framework of the undertaken research as small sample size, geographical limitedness and the methods of data collection have been used. Also, in terms of long-term consequences, new technologies and the constantly changing behaviour of customers present certain issues. Hence, the implications of the research findings are as follows for e-commerce practitioners, policymakers, and researchers in Bangladesh and globalizing world. Some solutions shown below include ensuring the Google Try-On innovation and its usability as a model for e-commerce markets' development. This research deepens the knowledge of applying virtual try on in online shopping and its significance in the emerging markets with focus on technology advancement, customer orientation and ethical issues of future of e-commerce markets.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The increasing trend of e-commerce business in Bangladesh, the necessity to improve the experience of the online buying process, and the positive impact of Google Try-On to meet vital customer's needs and boost the e-commerce market in Bangladesh.

1.1.1 Growth of E-commerce in Bangladesh:

E-commerce activities in Bangladesh have been on a meteoric rise for the last decade. Increasing internet penetration and the adoption of smartphones as well as a growing middle class have also led to an explosive growth in online shopping platforms. These statistics suggest that the e-commerce sector in Bangladesh has huge potential and with time, more and more people are moving towards becoming online shoppers!

1.1.2 Importance of Online Shopping Experience:

In the modern and digital age, online shopping experience takes up a huge part of a business in keeping or losing its customers. Consumers want increasingly more convenience, and choice, but they also demand seamless personalized shopping experiences. The quality of the online shopping experience in general affects how happy and satisfied consumers are with their purchase, as well as to what extent they remain loyal to a particular brand or business. Hence, for an e-commerce business to survive and sustain the substantial competition prevailing in the market, achieving a better online shopping experience is necessary.

1.2 Problem Statement

As freelancing has been growing in Bangladesh, e-commerce is also expanding its roots here. However, even with the growth of these and other modes of business transactions, traditional forms of getting them done have considerable challenges that can be addressed. One of the identified lack of try on for customers as one of the major problems. Since we cannot and do not have the ability to feel the product physically so, it ultimately creates reluctance in consumers' minds which further increases return rates and falls conversion for online retailers. On top of that, the experience is already not exceptional due to no personalized recommendations and interactive shopping experiences.

1.3 Research Objective

The primary objectives of this thesis are:

- Eligible Scope: The uses of Google Try-On technology to elevate the online shopping experience in Bangladesh.
- To examine the effect of Google Try-On on consumer performance, sales advancement, and user robust pleasure.
- Identify the Challenges & Opportunities of Google Try-On implementation in Bangladesh E-commerce landscape.

1.4 Scope and Limitations

This study primarily focuses on the feasibility and implications of implementing Google Try-On technology within the e-commerce sector of Bangladesh. While the findings and insights may have broader relevance, the specific geographic and demographic characteristics of Bangladesh will be central to the analysis. Factors such as internet access, smartphone usage, cultural preferences, and economic considerations will be taken into account when assessing the potential impact of Google Try-On.

1.5 Thesis Structure:

The remainder of this thesis is structured as follows:

- Chapter 2 presents a summary of some of the existing research in the online shopping trends, augmented reality technology and past studies on virtual try-on in e-commerce.
- Chapter 3 gives details of the research method used in this study, the selection of the research design to be employed, the techniques adopted in data collection, the method of sample selection and tools to be adopted in the analysis of data in the study.
- In Chapter 4, the author explores Google Try-On technology: what it is, how it works, its characteristics, how it fits into an e-commerce environment, technical requirements, and example applications.

- Chapter five of the research is devoted to the findings of the Google Try-On and its relevance for the notion of online shopping in Bangladesh concerning the aspects of consumer understanding, sales, and user engagement.
- As for the limitations and further development possibilities of Google Try-On technology concerning the discussed e-commerce environment of Bangladesh, this is provided in Chapter 6.
- In Chapter 7, I describe the survey result of Impact of the Google Try-On in Bangladesh. And the survey data get from google forms.
- Finally, in Chapter 8, the study provides Summary and Conclusion in regard to the findings of the research, contribution to the existing body of knowledge in the e-commerce industry, recommendations for practitioners and policymakers.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Electronic commerce adaptation is gradually growing in Bangladesh due to the enhancement in internet facility and advanced technological development. This growth has greatly contributed to increased online shopping and an increased influence to the economy. Identifying consumer behaviour including elasticity of demand, product attributes, convenience, credibility and bandwagon influence enables organizations to improve customers' satisfaction and therefore loyalty. New possibilities in terms of AR and VTO applications in the field of shopping are changing the way people make their choices and providing them with the opportunity to experience what it means to try products on in their environment. While it does enhance product visualization, decrease return rates, and customer engagement, there are issues that come with such technologies, which include; issues to do with realism, compatibility with mobile devices, privacy issues, and issues to do with cultural acceptance. Efficient use of the technologies like Google's Try-On has huge possibilities of growth in Bangladesh online shopping but to build more competitive, customer friendly customer experience aspirational level needs to be worked out with specific drawbacks.

2.2 Online Shopping Trends in Bangladesh

The emerging pattern in using or engaging in online shopping in Bangladesh with an emphasis on the significant development of e-shopping and the variable affecting the consumer. Precisely for this reason, it becomes crucial to comprehend these trends and behaviours in attempts to facilitate proper business interactions with the customers and enhance their e-shopping experiences.

2.2.1 Growth Statistics

The trend in the growth of e-commerce in Bangladesh is quite astonishing in the recent past with focused jump in the number of internet users, consumers, deals and total sale of products and services. Information collected from the BTRC and general research on the subject depicts

a picture of the progressive enhancement of e-commerce sites coupled with their positive impacts on the nation's economy.

2.2.2 Consumer Behavior Analysis

Know your customers is central to e- marketing since it can help e-commerce businesses to formulate the right approach towards the target market and improve on the shopping process. Several researches with the help of questionnaires, interviews and market research have learnt some variables, which affect the consumers buying behaviour, their decision to shop online and their loyalty towards brands in Bangladesh. Some of the factors that may be used include: price sensitivity, the quality and standard of the product, convenience, trust, and social proof.

2.3 Augmented Reality and Virtual Try-On Technology

The technology used incorporates Augmented Reality which superimposes virtual objects in one world on top of the physical world using a camera. Contrary to wearables, AR-based virtual try-ons have extended to product segments including Home Décor, Home Appliances, Furniture and so much more.

2.3.1 Definition and Concepts

Augmented reality or AR is the use of technology to put digital information and objects in the real world. Virtual try-on (VTO) can be considered as a kind of augmented reality application that gives the clients the opportunity to see how they will look wearing the specific product without its purchase. This technology combines live feeds or images from the user devices and overlays augmented images of the products [1][4].

2.3.2 Advantages in E-commerce:

Using virtual try on has its advantages in the context of e-commerce such as explaining product localization, attraction of consumers, decrease in rate of return goods, better visualization of products and increasing of customer satisfaction. By availing facilities to assist customers to experiment and interact with products as they do in real life, then the e-business regions are capable of increasing sale conversions and hence higher brand loyalty.

2.4 Previous Studies on Virtual Try-On in E-commerce

In the prior research on the use of virtual try-on solutions in e-commerce, emphasis has been made to its importance, performance and cooperation difficulties.

2.4.1 Case Studies and Success Stories:

Numerous publications of peer-reviewed scientific journals and strategic works show that Novosibirsk VTO solutions are efficient for various types of e-commerce businesses in the clothing, beauty, accessories, and furniture sectors. VTO examples reveal how it enhances the sales outcomes, customers' attentiveness, and online shops' efficiency, which indicates its relevance for turning business into daily practice [2][3][5][7][8][13][14][16][19][20][22][23][24][25][26][27][28].

2.4.2 Challenges Encountered:

But like any other innovation in a given field, it is also characterized by some challenges or limitations. Some of the technical shortcomings include; problem in accuracy, compatibility with devices, and in some cases problems in rendering. Thus, social and cultural limitations may encompass privacy issues, problems with cultural permissiveness, or different levels of acceptance by users around the world [12][13][17][18][22].

2.5 Challenges and Opportunities

Google Try-On technology in the e-commerce sector of Bangladesh has enormous prospects and potential management problems.

2.5.1 Technological Challenges:

Because, in VTO, one visualizes the product appearances on the customer's body, the meaningful development has to be directed towards the arithmetic computations of skin imitating color and the image processing to render realistic clothing appearance. Regarding speed, rating, lighting, and realistic product imagery, it is important to resolve the issues that affect the work [1][6][10][11][15][19][22][27].

2.5.2 Cultural and Societal Factors:

E-Commerce consumers culture, perceptions, and behaviors of different regions differ and can affect the success of virtual try-on clothing technology. Europeans cultural preferences, and

their need for privacy and, their expectations are other factors that must be considered for e-commerce to customize virtual try-on and make the most out of it.

2.6 Summary

There is good scope of e-commerce business in Bangladesh as its trends are increasing day by day along with the growing internet usage. Price, quality, convenience, trust and the importance of social reference groups are some of the factors that need to be appreciated by organizations that want to manage the customer communicated relationships effectively. AR and Virtual Try-On technology present new features to improve the online shopping experience which enables the utilization of a product before purchase. Thus, Virtual Try-On can be beneficiaries of both the strength and the weakness of using current VR technology, as it has shown positive results in practice in the fashion and furniture industries. Challenges that relate to culture, for instance the notion of privacy and regionality serve as a chance for e-commerce organizations to enhance the virtual fitting process and likely boost the satisfaction level and customer loyalty.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the details of the research and the process used to explore the effects of Google Try-On technology on electrical and electronics e-commerce in Bangladesh. Spatio-Temporeal Analysis of Technology Application: The research design, among other elements, offers an elaborate scheme of using both quantitative and qualitative research methods, with focus on the case study method to investigate particular cases in the use of technology. Questionnaires or interviews, for example, are provided as means of identifying useful information that may be obtained from the online shoppers and various stakeholders in e-commerce. Also, it reviews criteria for sampling and sampling methodologies in order to have assured data representation. Last but not the least, it gives an overview of statistical as well as qualitative analysis procedures which have been used to analyse the gathered data and establish parallelism with the research objectives.

3.2 Research Design

This paper defines the research design as a planning on how the study will be conducted to fit the research objectives. This section will focus on the methodology that would be adopted: the decision between quantitative and qualitative and how the case study method will be used.

3.2.1 Quantitative vs. Qualitative Approach:

Research methodology comprises of a broad plan of the whole process of research aimed at achieving the research objectives. The choices are also in between the quantitative and qualitative research strategies or adopt both quantitative and qualitative methods based on the nature of the research questions and data collection processes. Quantitative research entails the use of numerical data in an attempt to establish quality and exact correlations, while any method that collects information in the form of words or observation is a qualitative research that employs interviews, observations or text analysis.

3.2.2 Case Study Method:

In the circumstances of this thesis, it might be possible to use the case study method to examine the outcomes of the ‘Google Try-On’ technology applied to certain particular galleries for e-

commerce or some companies in Bangladesh. With referencing to specific cases, case studies allow to examine definite situations and find out how the application of virtual try-on technology can be effective and meet challenges in certain organizations.

3.3 Data Collection Methods

Data collection is an important aspect of research if valid and reliable data results are to be produced. This segment deals with the methods that will be adopted to collect data for investigating the effect of Google Try-On technology on the electrical and electronics e-commerce industry of Bangladesh.

3.3.1 Surveys:

Questionnaires are widely utilized in order to gather large-scale numerical data from the sample population. With regards to the current study, questionnaires may be conducted among online shoppers within Bangladesh concerning their understanding, attitudes, and past experiences of utilize virtual try-on technology. Some survey questions could be regarding awareness levels of Google Try-On, frequency of usage, customer satisfaction level, and customers willingness to buy the products.

3.3.2 Interviews:

Slave interviews are useful for the researcher in that it allows direct contact with the participant in an attempt to gather quality data. In this case, face-to-face, semi-structured or structured interviews may be administered on consumers, owners of the e-commerce platforms, developers or even marketing specialists involved in e-commerce affairs. Besides getting the business perspective, the interviews would ideally help oneself to unearth the reasons, issues and consequences of employing virtual try-on technology in the Bangladeshi context.

3.4 Sample Selection

The method of selecting the sample is another key factor in the research process, as the participants in the study have to embody the characteristics of the target population.

3.4.1 Criteria for Selection:

Sample selection entails some features of a population based on which one can identify the parameters of a population to include in the study. Thus, in surveys or interviews, criteria can

be specific demographic data or results of particular assessments. g. The study's predictor variables include demographic variables (age, gender, income), shopping behavior (e. g. Converting these into stimulus attributes, we have low involvement, low personal relevance (the ability to buy online less frequently), and low experience with virtual try-on technology. To avoid generalizing the findings of a study the sample should be a good representation of the target population.

3.4.2 Sampling Techniques:

The research sample that is used in any study is determined by Sampling techniques which specify on how participant are selected based on the population. Different types of samples are random sample, stratified random sample, convenience sample, and snowball sample. There is also the issue of method of sampling including accessibility of participants, general availability of funds and accuracy and representativeness of the study outcome.

3.5 Data Analysis

Sampling is a crucial activity in the research process because the participants selected should depict the population being studied.

3.5.1 Statistical Analysis:

Statistics is defined as the science that deals with the collection, analysis, interpretation, presentation and organization of data in the form of numbers with the use of mathematical tools mainly from surveys or experiments. Frequency tables, measures of central tendency such as the means, median and mode and percentiles may be used to describe the characteristics of the sample population. Inferential statistics might be used to include hypotheses testing like regression analysis, t-tests or ANOVA to check relationship between the variables.

3.5.2 Qualitative Analysis Techniques:

Qualitative analysis procedures are useful in making sense of textual or visual data that is collected from the interviews, observations, or open-ended questionnaires. The common approaches of qualitative analysis are thematic analysis, content analysis, and grounded theorization. These methods cover the patterns, themes, and relationships found in the data samples to deduce conclusions that are related to the subject of the research questions.

3.6 Summary

The research strategy in this study involves selecting between the quantitative and or qualitative research styles and or using a blend of the two as well as the data collection techniques which entails the use of surveys and or interviews in order to assess the behavior of the consumers of Try-On technology by the Google company in Bangladesh. Another approach is also the use of case studies to focus on the assessment of implementation of specific technologies. The techniques of featuring study populations include sample selection criteria and sample selection techniques, while data analysis entails developing numerical data analysis techniques for numerical data and textual or visual data analysis techniques for textual/visual data for making conclusions regarding the effectiveness and challenges in the sphere of virtual try-on technology in the Bangladeshi e-commerce market.

CHAPTER 4

GOOGLE TRY-ON: CONCEPT AND IMPLEMENTATION

4.1 Introduction

This chapter aims at clearly explaining the method that was followed in this study to establish the effects brought about by Google Try-On on the electrical and electronics e-commerce sector in Bangladesh. It has a layout of the research methodology section that shows the incorporation both qualitative and quantitative research designs adopted in the study; with a higher level of emphasis on use of case study method in the examination of distinct examples of technology application. Methods of data collection including the use surveys and interviews which are used for collecting information from shoppers who shop online as well as stakeholders in e-commerce. In the same chapter, the author also talks about how sample was selected and the techniques used in a precise manner to obtain a sample that would be representative of the population. Lastly, it identifies the analysis tools that are used to make a sense out of obtained data and analyze the data set in relation to the established research goals and objectives.

4.2 Overview of Google Try-On

Google Try-On is highly innovative in enhancing the way consumers shop online due to its application of augmented reality.

4.2.1 How Google Try-On Works:

Google Try-On is a mobile-based application that applies the system of augmented reality to let the customers try on various products with the help of their smartphones or other similar gadgets. As one of its key features, Google Try-On employs device's camera and AR to transpose the virtual images of the products to the user's surroundings. The main feature of the application is virtual fitting that involves choosing the products from the e-commerce site and seeing how they look on a person before buying.

4.2.2 Features and Capabilities:

Google Try-On has many features and options that would help with improving the virtual shopping experience. These may include: Hardware feedback: Clients are able to touch and

feel the products and its physical appearance and feel of the products. - Customization options: Through personalization, users may be in a position to come up with or be able to decide more on the characteristics of the product for instance, colour, size and style. - Social sharing: Thus, customers can share the results of their virtual fitting with friends and social networks or ask for help. - Integration with product information: Customers can read more about the product and its avails as well as, read its reviews when testing the product, helping them make a purchase decision.

4.3 Integration with E-commerce Platforms

Careful integration options with e-commerce platforms are crucial for the right use of Google Try-On.

4.3.1 Technical Requirements:

Before implementing Google Try-On to the e-commerce sites, it incorporates some requirements and features. This may include the integration of APIs so as to allow for other interconnections between the e-commerce platform and Google Try-On service. The technical needs may also differ from one case to the other due to the unique aspects of the e-commerce solution and the extent of modifications required.

4.3.2 Compatibility with Existing Systems:

It should go hand in hand with already established e-commerce systems and architectures in order to work effectively and become Google Try-On. This implies that considerations may include compatibility with web and mobile Devices, Operations Systems, and business Standards and Standard practices.

4.4 Technical Requirements

Google Try-On definition requires certain technical preconditions which are a measure of guarantee for its effectiveness.

4.4.1 Hardware Requirements:

Google Try-On is set to be used by individuals hence there is need to have compatible hardware like smartphones or tablets with the AR feature. The requirements for software may include

the type of devices needed such as models, Camera and other sensors that are required for augmented reality.

4.4.2 Software Development Considerations:

Factors that would come up when developing and deploying Google Try-On include; Consideration of programming languages used for the software, the development frameworks and the libraries. Some builders may require to use AR development kits such as ARKit for iOS systems and ARCore for Android, and incorporate Google Try-On APIs to their e-commerce sites. Concepts of software development also include, therefore, the design of the graphical user interfaces, user experience, and performance to create a fluid and convincing virtual fitting experience.

4.5 Case Studies

A briefing on successful cases and avoidable errors of Google Try-On integration grows potentially useful for subsequent application and improvement.

4.5.1 Successful Implementations:

Examples of the successful adoption of Google Try-On technology in other related exposures are demonstrated in the field of e-commerce as the following case studies reveal how Google Try-On was implemented to increase the efficiency of online shopping. These case may illustrate particular e-commerce platforms, industries or particular categories of products that were able to implement Google Try-On and received the positive result.

4.5.2 Lessons Learned:

Understanding the outcomes from earlier Google Try-On deployments can help other firms make improvements in their adoption. These may concern better practices, mistake not to make, technical issues experienced and approaches of gaining optimal results when applying virtual try-on-technology in e-business.

4.6 Summary

This augmentation technology is communicated to the target consumers through a smartphone application known as Google Try-On, which is well-suited to virtual try-ons of clothes. One of its main features leverages the device's camera and AR to overlay the images of products with the virtual fittings in the environment the user is in before purchases. Other enhancements include feedback pertaining to hardware, tailored capabilities, sharing with friends and families, as well as incorporation of products into the our everyday use. The integration with the e-commerce platforms would also mean that it would have to meet certain technical specification and be compatible with such platforms. In the available and proven case examples, it shows and reveals the impact of its effectiveness on improving the e-shopping services delivery.

CHAPTER 5

IMPACT OF GOOGLE TRY-ON ON ONLINE SHOPPING IN BANGLADESH

5.1 Introduction

This chapter aims to understand Google Try-On nascent technology effects on online shopping business in Bangladesh by discussing about consumers' perception and adoption issues, sales outcomes and conversion ratio and user satisfaction issues. Thus, based on the survey data, the present research evaluates the consumers' awareness of the product, their usage rate of the technology, their level of satisfaction, and the factors influencing the usage of the technology. Further, it contrasts Key Opinion Buyers' sales and conversion rate between the established approach to e-commerce and the Google Try-On, and the results of the two approaches on the revenue-generation and purchasing actions. The perception is then measured in order to evaluate the overall perception of the user to the service and if they were fully satisfied, in order to identify areas of improvement, for increasing the utility of the technology within the e-commerce sector of Bangladesh.

5.2 Consumer Perception and Adoption

It is necessary to comprehend consumers perception and acceptance of Google Try-On to introduce the technology successfully in the context of Bangladesh e-commerce.

5.2.1 Survey Results:

Thus, the survey findings can help analyse the consumers perception and readiness to accept Google Try-On technology in Bangladesh. Some of the measures that might be employed could include: possibility of potential users knowing about virtual try-on solutions, how often visitors use the service, their level of satisfaction, or their likelihood to purchase a particular type of product based on the virtual try-on service they were given. It is possible to have survey questions in the form of if respondents are aware of Google Try-On or not, how often do they use this technology, do they found this technology to be useful or not and if they are willing to use the Technology again in future for purchasing something.

5.2.2 Factors Influencing Adoption:

Technological factors that may affect the adoption of Google Try-On technology among the Bangladeshi consumers may include usability aspects, psychophysical aspects. Attitudes social factors, social factors and economic factor. Three of the limitations include: 1) reliability and validity of the measures used in the study; 2) generalisability of the study findings; 3) affordability, perceived value for money. Knowledge of these factors is beneficial in defining possibilities for increasing the use of VT-technology by consumers.

5.3 Sales and Conversion Rates

The customer conversion analysis on the overall sales, further, illustrates the extent to which Google Try-On has been effective in the context of Bangladesh's e-commerce market.

5.3.1 Comparison with Traditional E-commerce:

Establishing the level of sales and the conversion rate typical of original e-commerce stores and of the Google Try-On for comparing the sales impact that virtual try-on has on customer purchasing behaviour. Information including conversion rates, the AOV, and CAC may be evaluated to determine the efficacy of Google Try-On compared to traditional approaches for visualizing products. Gaps may also look at issues for example at return rates and customer lifetime value or CLV to determine its long term effect on profitability.

5.3.2 Impact on Revenue:

The metrics that normally need to be compared to understand the overall effect of Google Try-On on e-shopping businesses revenue in Bangladesh include: Total revenues, Adjusted revenues, sales per caput revenues or the alteration in the volume of business, Revenues per user (RPU), or the additionality of revenues. The effects of revenues can be evaluated in terms of the macro and micro levels of the company's activities taking into account the product sectors, customers, and marketing methods.

5.4 User Experience and Satisfaction

Measuring perception and satisfaction levels of the end-users is vital for the improvement of Google Try-On technology and its efficiency for Bangladesh e-commerce industry.

5.4.1 Feedback from Users:

It means that collecting information from the users who have tried Google Try-On to be more effective in terms of the general conception of usage and their satisfaction level. Such feedback may be obtained through questionnaires, interviews, group discussions, or customers opinions and assessments. Concerning this concept, users may comment on the following areas that relate to the virtual try on; usability, quality of the image, choice of products, as well as satisfaction.

5.4.2 Improvements Suggested:

An attempt to improve the implemented Google Try-On application may be made by establishing some recommendations based on the users reaction and noticeable items in Bangladesh. Such suggestions may include technical improvements and installation fixes including better item identification and scale modification and service improvements. Implementing the changes according to the user perceptions about the modified version of google try on in further versions may improve the success rate and usability in the Bangladeshi market.

5.5 Summary

Apprehension measures consumer's preparedness to use Google Try-On in Bangladesh by establishing their level of awareness, usage frequency, satisfaction levels, and probability of adoption in the future, and the determinant drivers of adoption embraces usability, attitude, social and economical factors. A comparative analysis of the effects of Google Try-On on the purchasing pattern with traditional e-commerce as the control examination of conversion rates, AOV, CAC, return rates, and CLV provides the necessary information on Google Try-On's profitability. Identifying the total, adjusted, per capita, and RPU simplifies Google Try-On's impact on e-commerce revenue in Bangladesh concerning sectors, customers, and marketing methods. Collecting users response on usability, image clarity, the range of products and their level of satisfaction enables enhancing the usability and performance in the Bangladeshi context.

CHAPTER 6

CHALLENGES

6.1 Introduction

In this process of analyzing the necessity and potential of applying Google Try-On technology within the e-commerce environment of Bangladesh, this chapter aims to explore the major challenges regarding both technical and cultural aspects. Technical issues consist of enhancing the likeness to reality in terms of the virtual fitting experience through utilization of artificial intelligence and arriving a progressive advancement in 3-d modeling as well as countering the lagging problem by simplification of software in addition to utilization of cloud. Moreover, the behavioral factors that influence consumers are acceptance, trust, and privacy concerns in the cultural and social society. Solving these problems involves understanding of cultural perceptions, protection of personal data and winning the consumers' trust to effectively employ Google Try-On service and propagate it in the context of the Bangladeshi market.

6.2 Technical Challenges

Integrating Google Try-On to e-commerce has its own bottlenecks as this section shows when outlining technical difficulties that have to be solved in order to get the best results.

6.2.1 Improving Accuracy and Realism:

To some extent, the multiplication of Artificial Intelligence empowers increased sales by improving the performance and realism of Try-On products. This is however achieved by enhancing the instances of 3D models, enhancing color correctness and optimizing object recognition algorithms so as to map the virtual objects onto real scene. Solving these issues involves the use of computer vision and machine learning approaches in addition to 3D rendering for better virtual try-on experiences.

6.2.2 Overcoming Hardware Limitations:

This remains the case due to several hardware features like the processing power, amount of memory, and the accuracy of the sensors which would be an issue if Google Try-On technology is to expand its horizons. The latter may entail fine-tuning software to accommodate various

devices, using cloud computing to offload the load of processing, and working with device manufacturers to build hardware that is suitable for virtual try-on applications.

6.3 Cultural and Social Factors

Marketing Google Try-On technology in the e-commerce environment needs to take into account numerous cultural and social aspects that affect consumers willingness to use the service.

6.3.1 Acceptance and Trust:

From the Bangladesh context and other related studies, it can be concluded that consumers perception regarding acceptability and reliability of virtual try-on technology is also attributable to cultural and social factors. The cultural beliefs, perceived attitudes towards technology and perceived attitudes towards privacy have an influential effect towards ction of consumers towards virtual try-on experiences. Google Try-On, as an automated technology, must tackle the issue of culture, inform users about data privacy, and ensure users trust and confidence in the accuracy of the results.

6.3.2 Privacy Concerns:

The questions of privacy are one of the crucial issues for the creation and implementation of Google Try-On technology. Some risks that the users may have are concerning the collection of personal data and other biometric data such as those taken while using virtual try-on solutions. To mitigate privacy issues, proper protective measures should be taken, users consent should be acquired to gather their information, and use the data collected for certain more purposes, and best practices as provided by the privacy laws should be followed. The appropriate use and management of data is critical in the advancement of try-on applications and user satisfaction.

6.4 Summary

Optimizing Google Try-On consists of increasing its accuracy and realism via better 3D models, and object recognition, and, in some cases, overcoming hardware limitations entails software fine-tuning and cooperation with the manufacturing industry. This study found that the perceived trust and privacy attribute of culture also have an impact on consumers and needs protective measures and the obedience to the rules and regulation on privacy.

CHAPTER 7

SURVEY RESULTS

7.1 Introduction

This chapter depicts the results of the survey questionnaire to measure the attitude of the consumers of Google try-on technology and to determine the level of intendness to adopt this particular technology in Bangladesh. These questions were submitted through Google Forms to the participants, and they are: Awareness and first impressions, Possible use, Perceived advantages/uses, Concerns, Anticipated consequences, Overall, and Opinion.

7.2 Summary of Findings

7.2.1 Key Insights:

1. **Demographics:** Respondents ranged in age, sex, region in Bangladesh were answered as follows..
2. **Awareness and Interest:** In the survey itself, though prior to its administration, respondents were not fully aware of Google Try-On. People also asked questions and exhibited interest as well as some extend of willingness to try this new type of food.
3. **Potential Usage:** A notable number of respondents expressed how they would probably adopt the feature when shopping, particularly clothing and accessories, eyeglasses, and cosmetics.
4. **Perceived Benefits:** The realized benefits of using touch screens were identified as better perception of products, improved confidence when making purchases, less tendency of returning a product and general enhanced satisfaction while shopping.
5. **Concerns:** Some concerns that participants reported include privacy concerns, the performance of the try-on, technical glitches, and the inventory.
6. **Impact on Shopping Habits:** Some of the respondents assumed that the feature will create more opportunities for shopping online, or on the contrary, people will stick to careful and selective buying, while some others said that this feature may have little or no impact on this.
7. **Recommendations:** A significant number stated that they would recommend the feature to friends and family indicating that other improvements such as introducing better product category variety, higher realism and accuracy, and friendlier interface, and speed of loading would encourage them to use the feature.

7.3 Survey Results and Analysis with Charts

In the subsequent section, survey responses are presented in the form of the Google Forms replies to allow readers to get a better grasp of the survey results. These tools assist in depicting the distribution of answers and the aspects that can be easily noted.

1. Demographic Distribution

Age:

What is your age?
19 responses

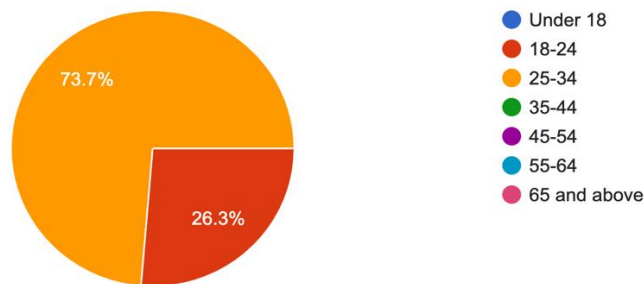


fig1: Age

Gender:

What is your age?
19 responses

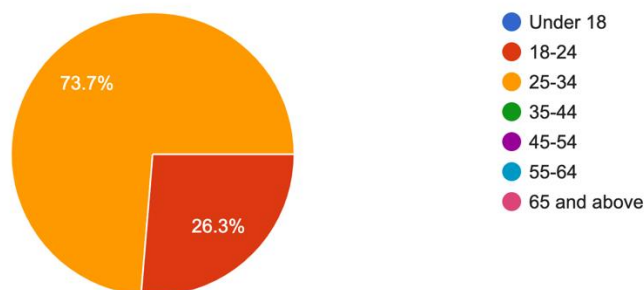


fig2: Gender

Location:

Where do you live in Bangladesh?

19 responses

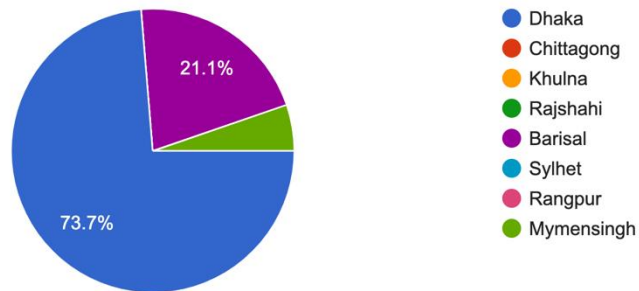


fig3: Location

2. Awareness and Interest

Awareness of Google Try-On:

Before this survey, were you aware of Google's try-on feature?

19 responses

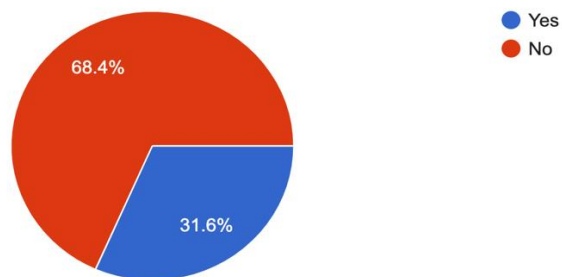


fig4: Awareness of Google Try-On

Interest in Trying Google Try-On:

After learning about the Google try-on feature, how interested are you in trying it?

19 responses

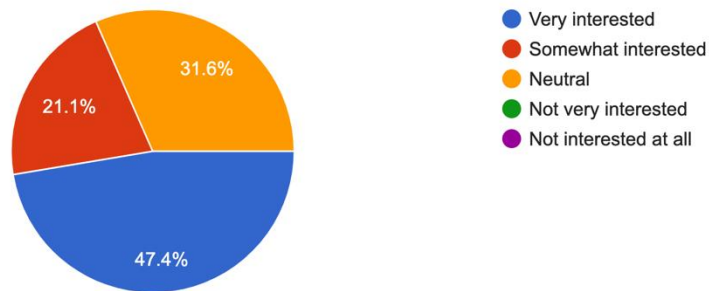


fig5: Interest in Trying Google Try-On

3. Potential Usage

Product Interest

What type of products would you be most interested in using the Google try-on feature for? (Select all that apply)

19 responses

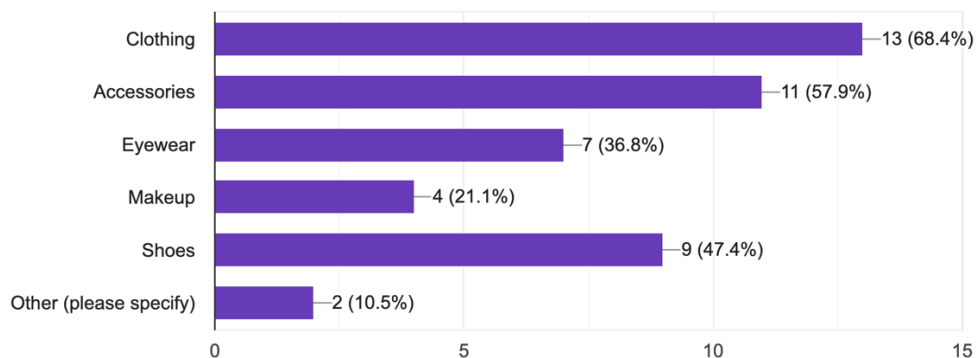


fig6: Product Interest

Likelihood of Using Google Try-On:

How do you think the Google try-on feature could benefit your online shopping experience? (Select all that apply)

19 responses

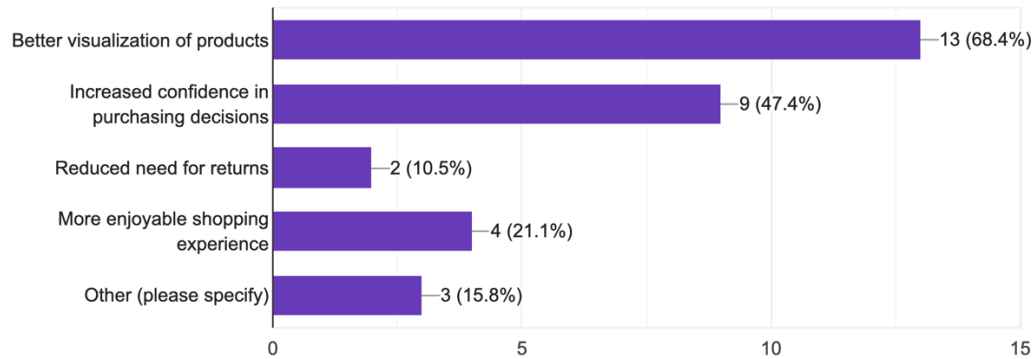


fig7: Likelihood of Using of Google Try-On

4. Perceived Benefits

What features would make you more likely to use the Google try-on feature? (Select all that apply)

19 responses

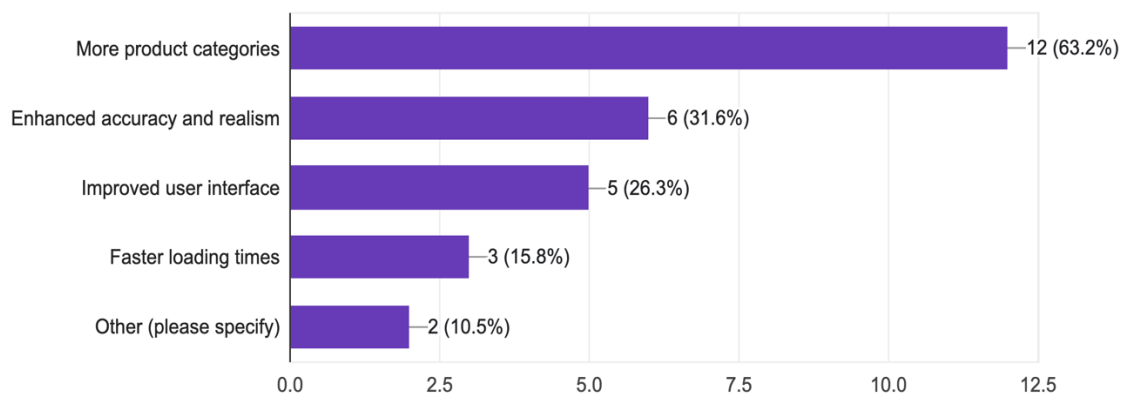


fig8: Perceived Benefits

5. Concern

What concerns, if any, do you have about using the Google try-on feature? (Select all that apply)

19 responses

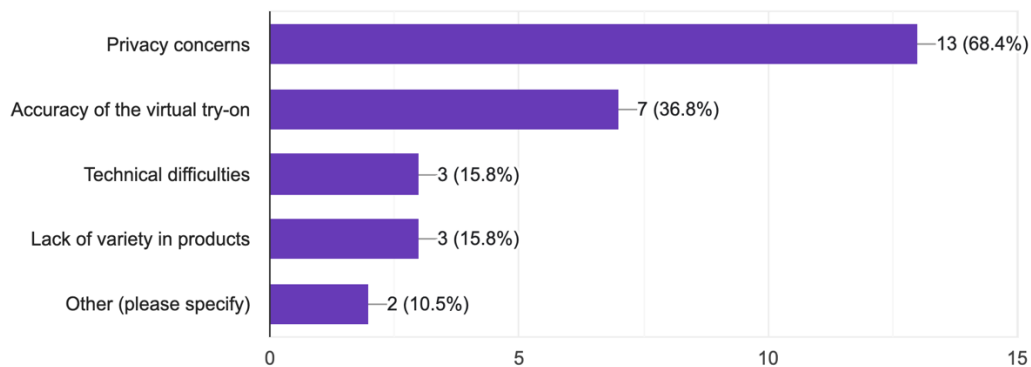


fig9: Concern

6. Impact on Shopping Habit

How do you think the Google try-on feature would impact your online shopping habits?

19 responses

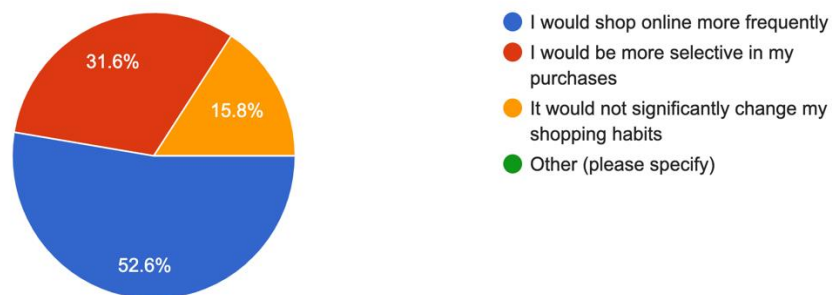


fig10: Impact on Shopping Habit

7. Recommendations

Would you be willing to recommend the Google try-on feature to friends and family?

19 responses

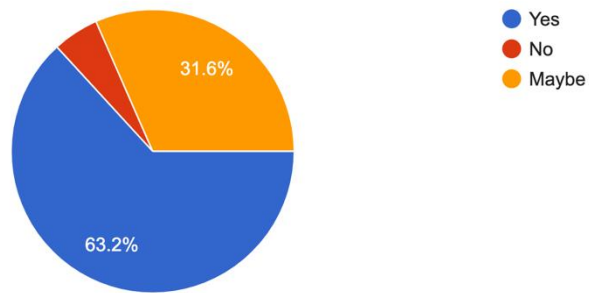


fig11: Recommendations

CHAPTER 8

CONCLUSION AND FUTURE WORK

8.1 Summary of Findings

8.1.1 Key Insights:

The research outcomes of this study towards understanding the role of Google Try-On in online shopping in Bangladesh gives rise to some important observations. These insights may include:

- Consumers giving positive response to fashion retailer and active use of the virtual try-on format especially by young people.
- There was also increased sales conversion rates on sweetfinds. co. uk as well as other e-commerce businesses which have adopted Google Try-On.
- Definition of specific objective issues that require technical and or cultural solutions for the project to work: realist, accurate, privacy, etc.

8.1.2 Contributions to Knowledge:

In this manner, this research enhances the current theoretical framework by furnishing the outlook on effectiveness and consequence of Google Try-On in the Bangladeshi circumstance of e-recreation by opening up the resolved quantitative findings. Using a systematic approach involving survey data analysis, quantitative and qualitative case studies, and segment-level analysis, the current research provides useable knowledge regarding consumers perceptions of virtual try on, technological limitations, and potential research areas in the application of virtual try-on solutions.

8.2 Implications for E-commerce Industry in Bangladesh

These findings have tremendous prospects for the study of e-commerce in Bangladesh and related organizations. The implementation of Google Try-On technology the level of engagement of the clients with the shopping website will greatly enhance, this will lead to lesser returns on the products that are ordered online and more sales will be made. Using the analysis of virtual try on, it is obvious that companies periodically offering it as a part of the services can set themselves apart from the competitors, attract more clients, and increase brand loyalty. However, the study agricultures that technical issues and cultural issues must be

effectively dealt in order to enhance the probability of Virtual Try-on technology acceptance among the consumers in Bangladesh.

8.3 Recommendations for Practitioners and Policy Makers

Based on the findings of this research, several recommendations can be made for practitioners and policy makers in the e-commerce industry:

- E-commerce practitioners should fund research and development to improve realism, usability of virtual try-on applications, solving technical issues and incorporating user opinions.
- It is recommended for the policy makers to embrace regulations all along with guidelines regarding the privacy as well as the subsequent protection that must be provided for the consumers within the context of virtual try-on applications
- The development and the problems that need to be solved in conjunction and the growth of the appropriate practice of the Virtual try-on technology depends upon the collaboration that needs to be established between the Industry stakeholders, Academia, and Government organizations of Bangladesh.
- It is essential to conduct ongoing research and carry out analysis to determine the effectiveness of virtual try-on applications and solutions in influencing the consumers behaviors, market trends, and organizational performance and successes in the e-commerce industry as to foresee and establish future directions for prospective advancements.

8.4 Future Research Directions

Studying potential areas of improvement for Google Try-On and the ways to apply it in the future may improve the technology itself.

8.4.1 Advancements in AR Technology:

Future research studies in Google Try-On technology may involve the development of more sophisticated augmented reality for creating realist, interactive, and practical virtual try-on services. This may involve using of advance AR methods like spatial mapping, occlusion rendering, physics based simulation to have an enhanced virtual environment. Some of the research activities may also focus on enhancing the applicability of AR for the e-commerce sector and other fields through increasing the solutions scopes, effectiveness, and availability.

8.4.2 Expansion to Other Product Categories:

The suggestions for future research can be further development of Google Try-On technology for products other than clothing and accessories. Virtual try-on tools, clothing, furniture, and home decor, automobiles, and healthcare are some of the areas that can be revolutionized by virtual try-on applications. There is scope for further research on factors involved in the implementation of virtual try-on services in different product categories based on their intricacy and consumers expectations and trends.

APPENDICES

Appendix A: Survey Questionnaire

The following is the detailed questionnaire was administered to the participants in the survey used in carrying out the study: It refers to the totality of all questions put to the respondents together with the respective options and any remarks made on the choice of responses.

Appendix B: Interview Protocol

Interview questions If structured or semi-structured interviews were employed in collecting the data, the questions posed to key informants from the e-commerce industry are contained in this appendix. It provides a guideline of the information that shall be collected from the participant in the interview including the areas of discussion and additional leading questions or probing questions that shall be asked to participants to get more details.

Appendix C: Case Study Details

This appendix contains additional information about the case studies which are described in this thesis: the brief information about the companies or e-commerce platforms which were examined, the strategic approaches used, successes and failures achieved and/or described, potential additional materials which are useful in understanding of the situation.

Appendix D: Data Analysis Procedures

This appendix highlights the steps and procedures that have been followed in the data analysis process during conducting the research. It may contain details of analyses that were conducted such as statistical tests, the codes to be used for and analyzing qualitative data or other procedures that were followed to enhance the validity and reliability of the data collected.

Appendix E: Technical Specifications

This appendix includes specific technical characteristics and conditions to incorporate Google Try-On into e-commerce applications. It may contain the information about the compatibility of the hardware, the compatibility of the software, API docs, and other such technical aspects.

Appendix F: Consent Forms

The originals of the consent forms or information sheets from the survey or interview participants should also be retained in this appendix. The first section captures the aim of the study, participants information and rights, and data management especially on how identification of subjects shall not be made in this study.

Appendix G: Additional Charts and Tables

This appendix contains all the extra graphs, tables, or any other visuals that can help the readers to understand the results provided in the main body of the thesis. It can comprise graphical displays of data, numerical measures, or comparisons with another group/segment/industry.

Appendix H: Glossary of Terms

This appendix offers the clarifications of several intentional terms, abbreviations, or specialized language with which the thesis can be found. It serves the purpose of making readers with no prior knowledge about a topic to be able to grasp what is being presented to them.

And these appendices are used to strengthen the content of the thesis because it is sometimes necessary to provide additional information and materials, which will be interesting for readers.

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