A STUDY ON THE OBJECTIVE QUALITY DIMENSIONS OF THE MOBILE SHOPPING APPLICATIONS AFFECTING THE PERCEPTION FOR THE SELECTION OF FASHION APPLICATIONS

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ABSTRACT :

　　Lot of factors contribute in the selection of mobile application for shopping of fashion products based on the experience they yield to the users. This paper aims to examine the perception for various mobile shopping applications based on the identified objective quality dimensions of the applications. Taking in account 14 objective quality dimensions, which operationally define 4 constructs – Engagement, Information, Functionality and Aesthetics, a survey of 522 respondents through structured questionnaire has been undertaken. Pearson's correlation has been used to understand the relationship between these quality dimension and the constructs thereby with the overall star rating given to the application. The Combined Average mean score of the constructs obtained by taking mean of the objective quality dimensions rating shows high correlation with the overall star rating. Hence, individually each dimension is tested. Certain objective quality dimensions attribute high correlation with the overall star rating whilst other are moderately correlated.
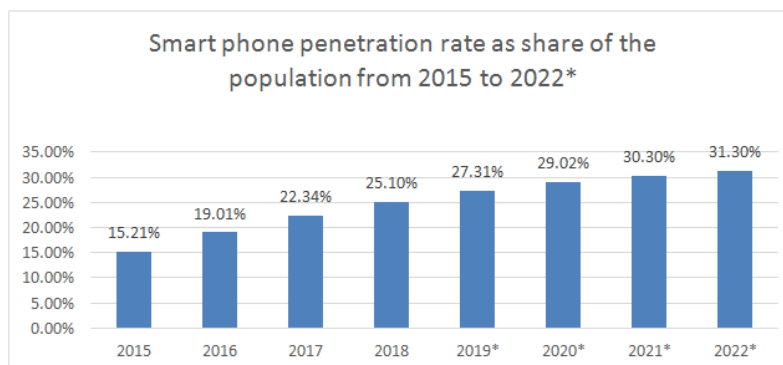
KEYWORDS : *Mobile Shopping Applications, Objective Quality Dimensions, Fashion Applications.*

INTRODUCTION

　　The penetration rate of smartphones has manifold almost by 50% in recent years, thereby providing immense opportunities to the retailer in terms of exploiting newer business opportunities (comScore, 2015, eMarketer, 2014c).

Smart phone penetration rate as share of the population from 2015 to 2022*

Year	Rate
2015	15.21%
2016	19.01%
2017	22.34%
2018	25.10%
2019*	27.31%
2020*	29.02%
2021*	30.30%
2022*	31.30%

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Even though m-commerce has been frequently visualised as an extension of already prevailing e-commerce it should be regarded as a standalone individual channel due to its unique value propositions that it overs to consumers because of the difference in technologies like mode of communication, protocols and device access (Balasubramanian et al. 2002).

With the sudden and immense advancement of technology, specially smartphones, shopping through applications has been evolving as the most recent trends in commerce industry. A lot of commerce companies have made their presence marked in the shopping application section owing to its huge popularity. The youth today is in no dearth scarcity of choices that are available in the mobile shopping application segment and hence the criteria and reasons of preferring a specific application is needed to be understood.

LITERATURE REVIEW

The utilitarian value addition of this newly added channel of smartphone shopping could be attributed to time convenience, user control, risk perception and cognitive effort with service compatibility not having as much strong correlation on mobile channel value perceptions, resulting into deeper understanding of behavioural intentions by the customers. Time consciousness would probably moderate the relationship (Kleijnen, Ruyter, & Wetzels, 2007)

It has been pointed out by (Kim, Kim, Choib, & Trivedi, 2017) in terms of their substantive findings that possession and usage of mobile shopping applications have relationship with certain factors. They made a reference of experience through online and mobile shopping having positive correlation to possession of shopping apps. Next there was a connection established between the browsing patterns of non-shopping apps in order to understand the possession of applications used for shopping with an exception of pre-loaded apps failing to make a relationship with mobile shopping. They also made a surprising deduction of browsing of shopping applications having the only or most effective impact on purchasing pattern with rest of the factors having little to no predictive value.

There has been no concrete literature available in terms of a predefined scale which can be used to gauge the mobile shopping application. Although lot of past researchers have explored the reasons for preferring mobile shopping applications over m-commerce and e-commerce websites, barely any research can be found on preferring a specific application over other based on a specific scale. The scale used in this study is the one developed for the assessment of Mobile health applications, called MARS (Stoyanov et. al,2015) has been customised and only 14 objective quality dimensions have been used which were relevant for fashion shopping applications.

Few of the other publications, conference proceedings, manuscripts and websites used as literature review to understand the criteria to confirm the quality dimensions used in Mars scale are summarised in the table below.

Author / Year	Title	Contains a scale
Publications		
Aladwani AM, Palvia PC; 2001	Developing and validating an instrument for measuring user---perceived web quality	Yes
Doherty G, Coyle D, Matthews M; 2010	Design and evaluation guidelines for mental health technologies	No
Finstad K; 2010	The usability metric for user experience	Yes
Ho B, Lee M, Armstrong AW; 2013	Evaluation criteria for mobile teledermatology applications	No

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	and comparison to major mobile teledermatology applications	
Kay---Lambkin FJ, White A, Baker AL; 2011	Assessment of function and clinical utility of alcohol and other drug web sites: An observational, qualitative study	Yes
Lavie T, Tractinsky N; 2004	Assessing dimensions of perceived visual aesthetics of web sites	Yes
Moshagen M, Thielsch M; 2012	A short version of the visual aesthetics of websites inventory	Yes
Olsina L, Rossi G; 2002	Measuring web application quality with WEBQEM	No
Schulze K, Krömker H; 2010	A framework to measure user experience of interactive online products	No
Tuch AN, Roth SP, et al.; 2012	Is beautiful really usable? Towards understanding the relation between usability, aesthetics, a	No
Conference proceedings		
Moustakis V, Litos C et al.; 2004	Website quality assessment criteria	Yes
Seethamraju R; 2006	Measurement of user---perceived web quality	Yes
Vermeeren APOS, Law ELC et al.; 2010	User experience evaluation methods: Current state and development needs	Yes
Manuscripts		
Naumann F, Rolker C; 2005	Assessment methods for information quality criteria	No

RATIONALE FOR THE STUDY

        As observed and found in literature search previously, it is undeniable fact that the mobile shopping application as a part of M-commerce industry is growing exponentially at a mammoth rate in India, especially Gujarat. So far various researchers have attempted to explain the reasons for preferring mobile shopping applications over its ecommerce websites or mobile websites. Apart from that various theories and models have been used to understand this preference pattern of shifting the mode of purchase. Hence this study intends to relate to all these scattered portions of research and fill in the gap of gauging the perception of application based on the various objective quality dimensions of the applications used by the

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consumers. Thus, it is understood how the perception for a shopping application is mediated by various objective quality dimensions and how those could be improved.

METHODOLOGY

In order to understand the reason for today's youth giving preference to one application over another, certain application specific dimensions both- objective and subjective, are vital for detailed understanding. A rating scale has been customised for the purpose of analysing the same which has been tested previously for the M-health applications. It is famously known as MARS (Mobile App Rating Scale) as described in the literature review. The rating scale for analysing the rating pattern for each of the constructs also has an overall Star rating marked by the respondents. A total of 522 respondents from four cities of Gujarat- Ahmedabad, Vadodara, Surat and Rajkot have been surveyed through structured questionnaire for the same purpose.

The Application specific quality dimensions under study are engagement, functionality, aesthetics and information. These dimensions are the constructs operationally defined by observed variables called factors in the current study.

In order to understand the statistically significant relationship between each average mean score of each of the quality dimensions as well as the combined with the overall Star rating, both categorised on an interval scale of 1, 2, 3, 4 and 5. The mean score of each construct has been calculated along with the combined mean of all the constructs. For statistical inferences, Pearson's correlation is used to understand the relationship between overall star rating given to the application and above-mentioned constructs as well as the factors.

EMPIRICAL FINDINGS AND ANALYSIS

In accordance to the objective of the research study, the following hypothesis has been framed:

$H_0 1$: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the mean score of objective quality dimensions rating.**
$H_1 1$: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the mean score of objective quality dimensions rating.**

Correlations			
		Total Average mean score	How much overall rating would you give the application?
Total Average mean score	Pearson Correlation	1	.572**
	Sig. (2-tailed)		.000
	N	522	522
How much overall rating would you give the application?	Pearson Correlation	.572**	1
	Sig. (2-tailed)	.000	
	N	522	522
**. Correlation is significant at the 0.01 level (2-tailed).			

Total average mean score and overall rating given to the application have a statistically significant relationship owning to its p value being 0.000 which is <0.001. Also, they are positively corelated that means with the increase in the value of factors contributing to average mean score the overall rating given to the application also increases positively. Apart from that the Pearson correlation coefficient is 0.572 > 0.5, hence they are highly correlated to each other.

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In order to further analyse which dimensions of the above-mentioned hypothesis establishes the relationship, the relationship of overall star rating given by the user ad each of the four constructs needs to be analysed. Hence, following hypothesis were analysed and proved.

$H_0$1A: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the engagement mean score.
$H_1$1A: There is statistically significant relationship between the overall Star rating of mobile shopping application and the engagement mean score.

$H_0$1B: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the functionality mean score.
$H_1$1B: There is statistically significant relationship between the overall Star rating of mobile shopping application and the functionality mean score.

$H_0$1C: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the Appeal Mean score.
$H_1$1C: There is statistically significant relationship between the overall Star rating of mobile shopping application and the Appeal Mean score.

$H_0$1D: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the information mean score.
$H_1$1D: There is statistically significant relationship between the overall Star rating of mobile shopping application and the information mean score.

Correlations						
		How much overall rating would you give the application?	Engagement mean score	Functionality mean score	Appeal mean score	Information mean score
How much overall rating would you give the application?	Pearson Correlation	1	.522**	.503**	.512**	.515**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	522	522	522	522	522

The mean score for each of the constructs is obtained by taking an average of the score of individual subscale variables that are clustered to define the constructs.   Based on those mean scores we can check the correlation of each of the constructs mean score with overall star rating, thereby understanding which construct affects the most in the rating of an application. Thus, engagement mean score, functionality mean score, aesthetics means score and information mean score are calculated and its correlation with overall star rating is obtained.

INDIVIDUAL OBJECTIVE QUALITY DIMENSIONS CORRELATION
Now in order to further understand the specific objective quality dimensions that have a relation with the overall star rating given to the application, individual correlation of each of the objective quality dimensions whose mean score has been tested in above hypothesis are analysed. For the same purpose, construct-wise sets of hypotheses have been framed below.

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Correlation of Objective quality dimensions contributing to Engagement mean score with the overall star rating given to the application

H_01E: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the entertainment dimensions.**
H_11E: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the entertainment dimensions.**

H_01F: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the interest dimensions.**
H_11F: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the interest dimensions.**

H_01G: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the customisation dimensions.**
H_11G: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the customisation dimensions.**

H_01H: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the interaction dimensions.**
H_11H: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the interaction dimensions.**

Correlations						
		How much overall rating would you give the application?	Entertainment	Interest	Customisation	Interaction
How much overall rating would you give the application?	Pearson Correlation	1	.376**	.452**	.458**	.476**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	522	522	522	522	522

The correlation matrix above show the relationship between entertainment, interest, customisation and interaction with the overall rating given to the application selected.

Correlation of Objective quality dimensions contributing to functionality mean score with the overall star rating given to the application

H_01I: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the performance accuracy dimensions.**
H_11I: **There is statistically significant relationship between the overall Star rating of mobile shopping application and the performance accuracy dimensions.**

H_01J: **There is no statistically significant relationship between the overall Star rating of mobile shopping application and the ease of use dimensions.**

$H_1$1J: There is statistically significant relationship between the overall Star rating of mobile shopping application and the ease of use dimensions.

$H_0$1K: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the navigability dimensions.
$H_1$1K: There is statistically significant relationship between the overall Star rating of mobile shopping application and the navigability dimensions.

$H_0$1L: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the gestural design dimensions.
$H_1$1L: There is statistically significant relationship between the overall Star rating of mobile shopping application and the gestural design dimensions.

Correlations						
		How much overall rating would you give the application?	Performance accuracy	Ease of Use	Navigability	Gestural Designs
How much overall rating would you give the application?	Pearson Correlation	1	.443**	.374**	.477**	.432**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	522	522	522	522	522

The correlation matrix above show the relationship between performance accuracy, ease of use, navigability and gestural designs with the overall rating given to the application selected.

Correlation of Objective quality dimensions contributing to Appeal Mean score with the overall star rating given to the application

$H_0$1M: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the layout dimensions.
$H_1$1M: There is statistically significant relationship between the overall Star rating of mobile shopping application and the layout dimensions.

$H_0$1N: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the graphics dimensions.
$H_1$1N: There is statistically significant relationship between the overall Star rating of mobile shopping application and the graphics dimensions.

$H_0$1O: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the visual appeal dimensions.
$H_1$1O: There is statistically significant relationship between the overall Star rating of mobile shopping application and the visual appeal dimensions.

Correlations		How much overall rating would you give the application?	Layout	Graphics	Visual Appeal
How much overall rating would you give the application?	Pearson Correlation	1	.383**	.536**	.339**
	Sig. (2-tailed)		.000	.000	.000
	N	522	522	522	522

The correlation matrix displays the relationship of layout, graphics and visual appeal with the overall star rating given to the application.

Correlation of Objective quality dimensions contributing to information mean score with the overall star rating given to the application

H_01P: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the quantity of information dimensions.
H_11P: There is statistically significant relationship between the overall Star rating of mobile shopping application and the quantity of information dimensions.

H_01Q: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the visual information dimensions.
H_11Q: There is statistically significant relationship between the overall Star rating of mobile shopping application and the visual information dimensions.

H_01R: There is no statistically significant relationship between the overall Star rating of mobile shopping application and the trust dimensions.
H_11R: There is statistically significant relationship between the overall Star rating of mobile shopping application and the trust dimensions.

Correlations		How much overall rating would you give the application?	Quantity of Information	Visual information	Trust
How much overall rating would you give the application?	Pearson Correlation	1	.503**	.499**	.527**
	Sig. (2-tailed)		.000	.000	.000
	N	522	522	522	522

The correlation matrix shows correlation that with 99% confidence level for a two tailed correlation between overall star rating given to the application and quantity of information, visual information as well as the trust factor of the application.

CONCLUSION
The advancement in the field of mobile commerce has led to an exponential increase in the development of applications for the purpose of commercialising the business more. In order to understand what factors of the mobile shopping application are considered important by the users and which affect the most in giving higher preference to such application needed to be understood. For the same purpose a mobile app rating scale as been customized for fashion applications in order to gauge the overall rating of

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the application based on the rating given to each of the objective quality dimensions and there by comparing the average mean of the constructs with the overall star rating given by the respondents. The statistical analysis using Pearson correlation revealed significant relationship between the overall star rating and average mean score of the constructs. Hence to analyse further, correlation between each mean constructs and overall rating were analysed. This again revealed significant relationship with overall star rating. Thus, to understand which objective quality dimensions have higher correlation with overall star rating, further correlation was analysed. The below table gives a summarised result of the analysis, thereby helping in understanding the degree of correlation between each objective quality dimensions and the overall star rating given to the applications.

Summarised result of the correlation of each of the dimensions and constructs with overall star rating

Hypotheses	Constructs/ Dimensions correlated with overall star rating	Correlation coefficient	Degree of correlation	Summarised results of hypothesis testing
H_01	Average mean score of the constructs	0.572	HIGH	Significant relationship exists (p <0.05)
H_01A	Engagement Mean Score	0.522	HIGH	Significant relationship exists (p <0.05)
H_01B	Functionality Mean Score	0.503	HIGH	Significant relationship exists (p <0.05)
H_01C	Appeal Mean Score	0.512	HIGH	Significant relationship exists (p <0.05)
H_01D	Information Mean Score	0.515	HIGH	Significant relationship exists (p <0.05)
H_01E	Entertainment	0.376	MODERATE	Significant relationship exists (p <0.05)
H_01F	Interest	0.452	MODERATE	Significant relationship exists (p <0.05)
H_01G	Customisation	0.458	MODERATE	Significant relationship exists (p <0.05)
H_01H	Interaction	0.476	MODERATE	Significant relationship exists (p <0.05)
H_01I	Performance accuracy	0.443	MODERATE	Significant relationship exists (p <0.05)
H_01J	Ease of use	0.374	MODERATE	Significant relationship exists (p <0.05)
H_01K	Navigability	0.477	MODERATE	Significant relationship exists (p <0.05)
H_01L	Gestural design	0.432	MODERATE	Significant relationship exists (p <0.05)
H_01M	Layout	0.383	MODERATE	Significant relationship exists (p <0.05)
H_01N	Graphics	0.536	HIGH	Significant relationship exists (p <0.05)
H_01O	Visual Appeal	0.339	MODERATE	Significant relationship exists (p <0.05)
H_01P	Quantity of information	0.503	HIGH	Significant relationship

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				exists (p <0.05)
$H_0 1Q$	Visual information	0.499	MODERATE	Significant relationship exists (p <0.05)
$H_0 1R$	Trust	0.527	HIGH	Significant relationship exists (p <0.05)

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