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DECISION MAKING IN THE ERA OF INFOBESITY: A STUDY ON INTERACTION OF GENDER AND PSYCHOLOGICAL TENDENCIES

Sana Maidullah[1], Ankita Sharma[2]
[1]Assistant Professor, Tourism and Airlines, School of Management and Tourism, Lovely Professional University, Punjab, India, [2]Associate Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Jodhpur, India.
Email: [1]sana.24860@lpu.co.in, [2]ankitasharma@iitj.ac.in

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Abstract

Purpose: This study examines information processing during consumer decision making on online platforms as influenced by gender differences and psychological tendencies. Further exploration is 'how much information is too much information; leading to infobesity.'

Methodology: The methodology to address the objective included the questionnaires for assessment of psychological tendencies and naturalistic experiments to measure decision making in online conditions. An online marketplace prototype was created for mobile purchase, named 'mobile bazaar,' and another for hotel booking, named 'backpackers.' The prototype was designed in such a way that the manipulation of information presented to the participant is possible. Participants were recruited with purposive and snowball sampling method depending upon their willingness and familiarity with online market platforms. Final data were collected from Three hundred sixty-eight participants during the period of October 2017- March 2018. The data from questionnaires and the computerized task was scored and analyzed with SPSS version 21 with t-test, chi-square and logistic regression analysis methods.

Main findings: The present study shows the influence of psychological tendencies (i.e., need for closure, exploratory tendencies, and uncertainty avoidance) and gender difference in decision making. Female seems to follow 'process less to process better' strategy, whereas, men seem to follow 'process more to get better' strategy. The findings also provided input to the debate of information measurement in consumer research.

Implications: Understanding decision making features of Indian consumers can not only contribute to the understanding of the naturalistic decision-making process itself but also can provide inputs to the market researchers, designers, and policymakers.

Novelty /originality of the study: The study was novel in terms of its use of the online marketplace prototype as a naturalistic decision making study method. This method allowed the researchers to examine participants' behavior (of information processing and decision making) in real like scenarios and yet had the luxury of manipulation of presenting information as per research design. Therefore the findings of present study will have more generalizability.

Keywords: *Online decision makings, Information load, Gender differences, Psychological tendencies, Information processing, Computerised task.*

INTRODUCTION

Traditionally, the decision-making literature assumed that the decision-maker searches for sufficient information and then takes the decision. However, with the technological revolution and internet boom, the reality is reversed, and many researchers are arguing about the effect of over information on the decision. The limited capacity of information processing (Bettman, 1979) also supports the link between information overload and decision difficulty. Pilli and Mazzon (2016) Suggested that at present normative and empirical evidence favor an increase in the availability of information and choice (in the decision environment) and at the same time, dysfunctionality of information overload.

Information overload or infobesity, a term grounded in Cognitive Psychology, has permeated academia; as the digital revolution has made it a reality of personal, formal/informal and business world. One area which has seen the most drastic change due to the digital revolution is a movement of the market to online platforms. Resnick (2001) suggested that the online decision-making environment has almost all the features of real-life decision environment (space for error, confusion, uncertainty, ambiguity, time constraint, profit/loss, etc.), and it even intensified it. Therefore, decision making research in an online environment can help in providing insight into the contradictory conclusions related to the benefits of increasing information/choice and dysfunctions originating from overload. Li and Zhang (2002) sums up the factors moderating decisions regarding how much one needs information, how they seek, compare, and chose an alternative to individual factors, context factors, and product characteristics. Present research considers the relevance of online platform for infobesity and importance of individual factors and context factors, and thus explores the "**amount of information processed by Indian males and females and influence of psychological tendencies in information processing while deciding on the online market platform."**

THEORETICAL BACKGROUND

Information overload: When information is too much

The concept of information overload is discussed in different areas for a long time. Miller's (1956) study in the human capacity of information processing has influentially contributed to its discussion, and this concept continues to be steadily explored (Melinat, Kreuzkam, & Stamer, 2014). Speier, Valacich, and Vessey (1999a) quoted (Milord & Perry, 1977) for defining information overload, which says, 'Information overload occurs when the amount of input to a system exceeds its processing capacity.'

Early work on the role of information overload on consumer decision making was done by (Jacoby, Speller, & Kohn, 1974). Eppler and Mengis (2004) in their systematic review, reported that there was increasing interest in the topic from 1970 to 2000 in different areas such as organization science, accounting, management information system, and marketing. This exploration mainly concentrated on definitions; situations explored causes, effects, and countermeasures.

Speier, Valacich, and Vessey (1999b) Concluded that information overload occurs when the time required to meet a decision-makers processing requirement exceeds the amount of time available for such processing, resulting in degradation of decision quality. Eppler and Mengis (2004) summarizes the causes of information overload to (1) information itself (quantity, frequency, intensity, and quality), (2) person receiving and processing the information, (3) the task or processes need to be completed, (4) organizational design, and (5) the information technology used. These five factors in combination create two fundamental variables of information overload: information processing capacity and information processing requirement. According to Miller's magical number (1956), the information processing capacity is 7+/-2. However, Wright (1975) suggested that "six is expected to represent the maximum comfortable load" in the decision-making process. Bettman (1979) also supported Wright (1975) by concluding that consumers are likely to adopt simplifying information processing strategy when the number of choice alternatives exceeds five. In the seminal work, (Malhotra, 1982) stated that the span of easily processed information for any consumer lies somewhere between 10 or less than ten combinations of information. In the last decade, Lee and Lee (2004) concluded that more than eight attributes significantly impose information overload and led to a negative effect on choice quality.

Currently, there are two significant debates in the field which are related to the measurement of information (i.e., information structure and information load) and effective countermeasures for information overload. Research on information overload tends to consider information overload in terms of criteria rather than the alternative, i.e., it is less about extending the choices and more focused on extra information about those choices. In connection to factors leading to information load, the extra information about a choice could relate to the alignability or non-alignability across choices. The information overload is only described using fix number of attributes and options (Pilli & Mazzo, 2015[2]; Rudd, 2009), and no clear indication is there that contribution of alignability is more or non-alignability is more in creating information overload. However, researches have concluded that through the structural approach to information load suggests that it has a negative effect on the decision; there have been debates over how best to define and measure the amount of information, leading to inconsistent conclusions (Hwang and Lin, 1999; M.-H. Huang, 2000; Lee and Lee, 2004).

Though these findings provide the trend, the issue remains inconclusive when combined with the measurement of information debate — similarly, the question arises from the relative importance of task-related factors and individual factors in creating information overload. Kock (2001) Explored if individual factors are comparatively more or less important than task factors in influencing perceived information overload and concluded for their similar contribution.

INDIVIDUAL FACTORS

Most commonly considered internal variables are influencing information processing includes gender, social class, culture, education, and knowledge (Putrevu, 2001). Gender continues to be one of the most common segmentation in marketing researches, and hence (Kim, Lehto, & Morrison, 2007) questioned whether the consistent differential pattern of gender differences could be created in information processing and judgment. Though the general conclusion is that there are no significant gender differences in cognitive theories, the research literature of hemispheric dominance (Everhart et al. 2001), cognitive processes (Geary 1996; Schumacher & Morahan-Martin 2001) personality (Darley & Smith 1995; Else-Quest et al. 2006; Meyers-levy & Loken 2014), information search and processing (ChanLin 1999; Kim, Lehto, & Morrison 2007; Shashaani 1997) show significant differences in multiple dimensions. (Meyers-levy & Loken, 2014) commented that investigation and understanding gender differences had been few in numbers, often a week in theory and somewhat limited in progress, especially concerning consumer researches. They attempted to reinvigorate the inquiry by identifying the areas of opportunity. The first area they identified was the development of an encompassing theory that can integrate connections between gender's cognitive processes and their temperament.

There are several types of research evidence for each of these components reported separately. (Else-Quest et al., 2006) in their meta-analysis on gender differences in temperament concluded for significant differences in inhibitory control, perceptual sensitivity, surgency. Similarly, (Gysler, Brown Kruse, & Schubert, 2002) provided evidence for the link between risk processing and ambiguity aversion, Coley and Burgess (2003) and (Tifferet &Herstein, 2012) suggested that women are more cognitively, and affectively impulsive purchase decision-maker; Darley and Smith (1995) gave a selective model to explain that men and women use different strategies and stages to process personal and environmental stimuli. However, there is a need to synthesize these findings to develop a theory.

The literature on online consumer decision making has several established trends relating to gender, cognitive processes, and purchase behavior. Park et al.(2009) suggested that females need more detailed information and assistance than males while shopping, probably because males effectively use a more heuristic approach in information processing (Downing, Chan, Downing, Kwong, & Lam, 2008). Previous studies also found a significant difference in the male and female motivational levels of online shopping. Huang and Yang (Huang & Yang, 2010) reported that males are mainly looking for utilitarian motivation (convenience, choice, availability of information, lack of social interaction and cost-saving) whereas females are looking for hedonic motives (adventure, sociality and fashion and value). (Javadi, Rezaie Dolatabadi, Nourbakhsh, Poursaeedi, & Asadollahi, 2012) commented that online decision making includes financial risk and non-delivery risk and therefore there could be significant gender differences due to females being more risk aversive than males (Meyers-levy & Loken, 2014). In general, researchers say "Women need the right atmosphere, space, and time to find just the right item. Men want to get the job done", according to the situation, they use different proposition to choose, select and process information.

Amidst the merger of one of the largest Indian online stores (Flipkart) with the world's largest retailer (Walmart), the shift in the market and change in nature of Indian economy is more pronounced now. The same is proven by the ASSOCHAM report on India being one of the biggest online markets and is still rapidly growing (more than 100 million by the end of 2017, ASSOCHAM, 2017). Given the above background extending and exploring (Meyers-levy & Loken, 2014), the suggestion for integrating the connection between gender's cognitive processes and their temperament is worthwhile. Therefore, the present study aims to examine the "**Gender difference in information processing as influenced by psychological tendencies in online decision making."** Specifically: gender differences in psychological tendencies; gender differences in processing information load for online decision making; and psychological tendencies (need for control, uncertainty avoidance, impulsivity, and exploratory tendencies) influencing information processing in both the genders.

Hypothesis: By previous literature, the hypothesized trend for the objective mentioned above could be as follows:

H_1. Females will show more impulsive and exploratory behavior, whereas males will show more need for control and uncertainty avoidance behavior.

H_0. There will not be any gender difference in processing information load.

H_2. Impulsivity and exploratory behavior will influence information processing in females.

H_3. The need for control and uncertainty avoidance will influence information processing in males.

METHODOLOGY

Sample: The study included 368 participants (Female, N = 165, Mean age = 25.33; Male, N = 203, Mean age = 27.71). The participants were recruited with a purposive and snowball sampling method, depending upon their willingness and familiarity with the online marketplace. The data was collected from October 2017- March 2018 with the help of questionnaires to measure the psychological tendencies and two computerized tasks to measure the information processing in online decision making.

Questionnaire: Need for closure, uncertainty avoidance, impulsivity, and exploratory tendencies, all three of these tendencies associate with the way an individual seek, process and react to the information and therefore they were explored in the study. The need for closure scale (Roets & Van Hiel, 2007) has 42 items for five factors naming order, predictability, decisiveness, ambiguity, and close-mindedness. Intolerance of Uncertainty Scale (Buhr & Dugas, 2002) was used to assess uncertainty avoidance. The scale has 27 items for four factors naming desire for predictability, uncertainty paralysis, uncertainty distress, and inflexible belief. The Barratt impulsivity scale (Patton et al, 1995) has 30 items for three factors naming non-planning impulsiveness, cognitive impulsiveness, and motor impulsiveness The exploratory tendency scale (Raju & Venkatesan, 1980) has 39 items for six factors naming Innovativeness, Risk-taking, Exploratory through shopping, Interpersonal communication, Brand switching, and Information seeking.

Experiment- The e-commerce websites give an advantage of studying the decision-making process, similar to the real-world scenario and it may also provide scope for experimental manipulation. Thus an online platform for the product purchase was created. The mobile phone and hotel were chosen as the products due to it being an everyday use and being sold through e-commerce websites in reality. The mobile site named 'Mobile bazaar' and hotel website named 'Backpacker' was created, and

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participants were asked to use the site, assuming that they are purchasing mobile and booking a hotel room. The experimental interface was designed with the Xampp software; the frontend is HTML CSS JAVASCRIPT and Backend is PHP MySQL.

Analysis and result: The choice of mobile and hotel in connection with the participant's gender and psychological tendencies is analyzed to answer the objectives by using SPSS version 23. First, of, data was cleaned for any outliers or missing data, and the fundamental analysis for gender difference was done

Table:1 *t* table Gender difference in psychological tendencies

Personality factor	Gender	N	Mean	Sd	T	P	D^2
Need for closure: order	Female	165	35.06	5.746	-.194	.846	.020
	Male	203	35.18	6.181			
Need for closure: predictability	Female	165	25.65	5.252	-.704	.482	.073
	Male	203	26.04	5.304			
Need for closure: decisiveness	Female	165	19.78	4.008	.089	.929	.010
	Male	203	19.74	3.889			
Need for closure: ambiguity	Female	165	31.89	4.564	1.774	.077	.186
	Male	203	30.98	5.154			
Need for closure: close-mindedness	Female	165	20.18	3.624	1.109	.268	.118
	Male	203	19.75	3.635			
Total need for closure	Female	165	132.5576	14.65387	.541	.589	.058
	Male	203	131.6995	15.52077			
Exploratory tendency: repetitive behaviour proneness	Female	165	18.28	3.372	1.259	.209	.130
	Male	203	17.87	2.899			
Exploratory tendency: innovativeness	Female	165	28.64	4.033	1.084	.279	.112
	Male	203	28.18	4.144			
Exploratory tendency: risk taking	Female	165	25.96	3.420	.259	.796	.026
	Male	203	25.87	3.260			
Exploratory tendency: Through shopping	Female	165	23.23	3.299	3.880	.000	.406
	Male	203	21.87	3.394			
Exploratory tendency: interpersonal communication	Female	165	9.46	1.751	-.721	.471	.075
	Male	203	9.59	1.708			
Exploratory tendency: brand switching	Female	165	22.34	3.369	1.115	.266	.145
	Male	203	21.95	3.367			
Exploratory tendency:	Female	165	38.28	4.238	2.690	.007	.282

information seeking	Male	203	37.03	4.618			
Total exploratory tendency	Female	165	166.19	16.331	2.261	.024	.236
	Male	203	162.34	16.162			
Intolerance uncertainty scale: desire for predictability	Female	165	22.21	5.171	.125	.901	.012
	Male	203	22.15	4.701			
Intolerance uncertainty scale: uncertainty paralysis	Female	165	17.69	4.821	.510	.610	.052
	Male	203	17.44	4.639			
Intolerance uncertainty scale: uncertainty distress	Female	165	14.45	4.188	-.402	.688	.041
	Male	203	14.62	4.005			
Intolerance uncertainty scale: inflexible uncertainty beliefs	Female	165	11.49	3.225	-.165	.869	.018
	Male	203	11.55	3.247			
Intolerance uncertainty scale: total	Female	165	65.842	15.297	.058	.954	.006
	Male	203	65.753	14.133			
Impulsivity: non-planning impulsiveness	Female	165	19.37	4.539	1.131	.259	.118
	Male	203	18.85	4.217			
Impulsivity: cognitive impulsiveness	Female	165	12.54	2.555	1.372	.171	.143
	Male	203	12.16	2.731			
Impulsivity: motor impulsiveness	Female	165	19.30	4.354	-.570	.569	.059
	Male	203	19.55	4.030			
Impulsivity: total impulsiveness	Female	165	21.59	5.387	.211	.833	.023
	Male	203	21.47	5.018			

*p<.05, **p< .01, ***p<.001

The results were per previous literature that on the majority of information processing psychological tendencies there were no significant differences. However, females are higher in exploratory tendency, through shopping (t= 3.88, p<.00), information seeking (t=2.69, p<.007), and total (t=2.261, p<.024) than males.

As the present study extends (Lurie, 2002) study with manipulation of attribute level also the number of alternatives provide (following the traditional and structural approach); k-mean cluster analysis was done to create different information load. Further descriptions and results are discussed separately for both the experiments.

Study 1: Mobile Experiment

This experiment follows the two-phase plan. To start the experiment, the participant had to fill in their demographic information, then phase one starts. In phase one, participants had to create a wish list from multiple mobile choices. The mobile options were organized into three categories (four, eight, and twelve options per page) x three attribute level (four, eight, twelve attributes per option). Total of 72 mobile options were created and displayed on nine pages, creating nine factors (4 x 4, 4 x 8, 4 x 12, 8 x 4, 8 x 8, 8 x 12, 12 x 4, 12 x 8, and 12 x 12). The pages follow an increasing amount of options and attribute wise information. The choices were arranged in basic (least price and lowest version of attribute), fully loaded (highest price

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and best version of attribute), and middle option (gradually increasing the price with mix versions of attributes), in every factor. Fully loaded options were always the last display on every page.

In the phase-one, participants can see any page as many times as they want with the help of 'previous' and 'next' button, or they can go to the cart with the help of 'go-to final choice' button. On the final page, the participant can make the decision or terminate the experiment without choosing any option.

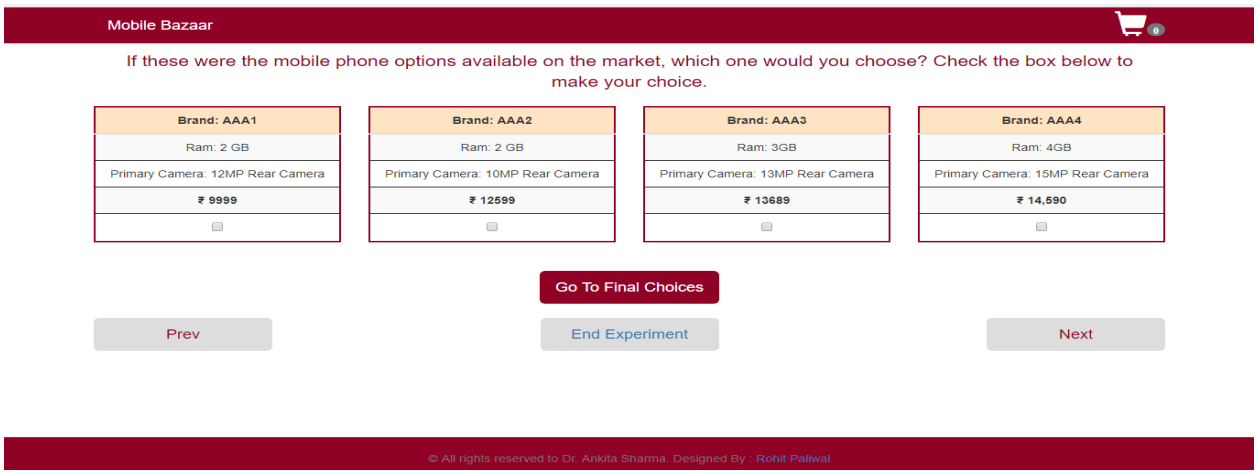

Figure 1: Depicting the 4x4 factor of the online platform

An example of elements, factor one (with four options and four attributes), factor two (with eight options and eight attributes), and factor three (with twelve options and twelve attributes) is illustrated in table 2. For each choice, the brand was the first attribute displayed, and the price was the last one.

Table 2: Includes details of attributes provided in each option level

Choice task	Brand	Ram	Primary camera	Processor	Screen size	Internal memory	Expandable memory	Weight	Sim slot	Battery life	Colour	Price
	1	2	3	4	5	6	7	8	9	10	11	12
4X4	✓	✓	✓									✓
8X8	✓	✓	✓	✓	✓	✓	✓					✓
12X12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

RESULTS AND DISCUSSION

The k-mean cluster was computed to combine similar choice categories. The analysis resulted in two distinct categories, and according to experimental understanding, they were named as low and high information load.

Table 3: *Chi-square* table information load and factor wise

Factor wise options	Cluster 1	Cluster 2	***Chi-square***
	Low information	High information	
4*4	17(100.0%)	0	368.0***
4*8	42(100.0%)	0	
4*12	52(100.0%)	0	
8*4	0	10(100.0%)	
8*8	0	68(100.0%)	
8*12	0	53(100.0%)	
12*4	0	5(100.0%)	

12*8	0	53(100.0%)
12*12	0	68(100.0%)

*p<.05, **p< .01, ***p<.001

Table 4: *chi-squared*tableGender wise

Gender	Cluster 1	Cluster 2	
	Low Information	High information	X^2
Female	60(34.4%)	105(63.6%)	
Male	51(251%)	152(74.9%)	5.46***

*p<.05, **p< .01, ***p<.001

Table 5: *t* table personality factor and mobile information load wise

Personality factor	Number of Case	N	Mean	Sd	T	P	D^2
Need for closure: Order	Low information	111	35.52	5.366	.832	.406	0.09.
	High information	257	34.96	6.231			
Need for closure: Predictability	Low information	111	26.59	5.261	1.737	.083	.005
	High information	257	25.56	5.263			
Need for closure: Decisiveness	Low information	111	20.24	4.034	1.565	.118	0.173
	High information	257	19.54	3.884			
Need for closure: Ambiguity	Low information	111	32.14	4.678	1.946	.052	0.223
	High information	257	31.06	4.984			
Need for closure: Close-mindedness	Low information	111	20.14	3.670	.698	.486	.076
	High information	257	19.86	3.618			
Total need for closure	Low information	111	134.6486	14.9354	2.148	.032	.244
	High information	257	130.9767	15.0988			
Exploratory tendency: Repetitive behaviour proneness	Low information	111	18.81	3.192	3.101	.002	.349
	High information	257	17.72	3.040			
Exploratory tendency: Innovativeness	Low information	111	28.95	4.012	1.757	.080	.199
	High information	257	28.14	4.115			
Exploratory tendency: Risk taking	Low information	111	26.37	3.278	1.754	.080	.199
	High information	257	25.71	3.337			
Exploratory tendency: Exploratory through shopping	Low information	111	23.15	3.512	2.509	.013	.280
	High information	257	22.19	3.338			
Exploratory tendency: Interpersonal communication	Low information	111	9.48	1.612	-.402	.688	.047
	High information	257	9.56	1.776			
Exploratory tendency: Brand switching	Low information	111	22.62	2.976	1.875	.062	.218
	High information	257	21.91	3.509			
Exploratory tendency: Information seeking	Low information	111	37.97	4.358	1.069	.286	.121
	High information	257	37.43	4.544			
Total Exploratory tendency	Low information	111	167.3604	15.9572	2.559	.011	0.291
	High information	257	162.6498	16.3134			
Intolerance uncertainty scale: Desire for Predictability	Low information	111	22.97	4.639	2.053	.041	.236
	High information	257	21.83	4.993			
Intolerance uncertainty scale: Uncertainty Paralysis	Low information	111	18.03	4.475	1.272	.204	.146
	High information	257	17.35	4.811			
Intolerance uncertainty scale: Uncertainty Distress	Low information	111	15.53	3.712	3.086	.002	.357
	High information	257	14.12	4.169			

Intolerance uncertainty scale: Inflexible Uncertainty Beliefs	Low information	111	12.24	3.131	2.841	.005	.323
	High information	257	11.21	3.232			
Intolerance uncertainty scale: Total	Low information	111	68.7748	13.5570	2.586	.010	.299
	High information	257	64.5058	14.9345			
Impulsivity: non-planning impulsiveness	Low information	111	19.21	4.489	.355	.723	.040
	High information	257	19.03	4.319			
Impulsivity: Cognitive Impulsiveness	Low information	111	12.63	2.663	1.434	.152	.161
	High information	257	12.20	2.649			
Impulsivity: Motor Impulsiveness	Low information	111	19.68	4.256	.727	.468	.083
	High information	257	19.33	4.142			
Impulsivity: total impulsiveness	Low information	111	21.41	5.408	-.267	.789	.030
	High information	257	21.57	5.089			

*p<.05, **p< .01, ***p<.001

Statistically, all four choice options (4x4, 4x8, and 4x12) formed the low information category, and all 8 and 12 choice options created a high information category. It appears that both males and females have used high information options for decision making that low information options; however, psychological tendencies interact differently with information. Individuals select low information choices if they are high on need for closure: ambiguity (t=1.946, p<.05), total need for closure (t=2.148, p<.03), repetitive behaviour proneness (t=3.101, p<.002), exploratory through shopping (t=2.559, p<.001) desire for predictability (t=2.053, p<.041), uncertainty distress (t=3.086, p<.002), inflexible uncertainty belief (t=2.841, p<.005) and total intolerance for uncertainty (t=2.586, p<.01).

Table 6: *Logistic* table

Variable	b [95%C.I. B]	S.E.(b)	Wald	Sig	Exp(b)
Need for closure: Order	0.044	0.032	1.872	0.171	1.045
Need for closure: Predictability	-0.087	0.039	4.832*	0.028	0.917
Need for closure: Decisiveness	-0.031	0.048	0.426	0.514	0.969
Need for closure: Ambiguity	0.005	0.038	0.014	0.906	1.005
Need for closure: Close-mindedness	0.056	0.048	1.373	0.241	1.058
Gender (female)	3.645	2.305	2.5	0.114	38.296
Gender (female) * Need for closure Order	-0.082	0.046	3.124	0.077	0.922
Gender (female) * Need for closure Predictability	0.11	0.055	4.043*	0.044	1.116
Gender (female) * Need for closure Decisiveness	0.009	0.066	0.018	0.894	1.009
Gender (female) * Need for closure Ambiguity	-0.069	0.057	1.453	0.228	0.934
Gender (female) * Need for closure Close-mindedness	-0.109	0.068	2.591	0.107	0.897
Constant	1.214	1.526	0.633	0.426	3.368

Omnibus $\chi 2$ (11) = 18.990, p>.05, R^2= .050(Cox & Snell), .071 (Negelkerke) *p<.05, **p< .01, ***p<.001 *Ɪ—95%* C.I. for EXP(B)

A logistic regression analysis shows that there is a significant influence of the need for closure subset predictability with gender and as well as alone on the selection of information (χ 2 (11) = 18.990, p > .05). The model explained 7.1% variance in information selection (Negelkerke R) and was able to identify 71.5% of cases accurately. The sensitivity of the model was 98.1%,and specificity of the model was 9.9%. The results show that for every unit decrease in predictability the odds for making a decision from high information load is .917,and when gender interact with predictability the result shows that for

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every unit increase in predictability for males (in comparison to females) the odds for making a decision from high information load is 1.116.

Table 7: *Logistic table*

Variable	*b [95%C.Ib.]*	S.E.(*b*)	Wald	Sig	Exp(*b*)
Exploratory tendency: Repetitive behaviour proneness	-.078	.073	1.156	.282	.925
Exploratory tendency: Innovativeness	.046	.057	.636	.425	1.047
Exploratory tendency: Risk-taking	-.031	.067	.214	.643	.969
Exploratory tendency: Exploratory through the shopping	-.098	.067	2.144	.143	.906
Exploratory tendency: Interpersonal communication	.108	.106	1.039	.308	1.114
Exploratory tendency: Brand switching	.021	.070	.091	.763	1.021
Exploratory tendency: Information seeking	-.032	.046	.505	.477	.968
Gender (Female)	-1.657	2.564	.418	.518	.191
Gender (Female) * Exploratory tendency: Repetitive behavior proneness	-.080	.100	.647	.421	.923
Gender (Female) * Exploratory tendency: Innovativeness	-.101	.080	1.604	.205	.904
Gender (Female) * Exploratory tendency: Risk-taking	-.013	.092	.021	.886	.987
Gender (Female) * Exploratory tendency: Exploratory through shopping	.029	.097	.091	.763	1.030
Gender (Female) * Exploratory tendency: Interpersonal communication	-.078	.146	.286	.593	.925
Gender (Female)* Exploratory tendency: Brand switching	.027	.102	.069	.793	1.027
Gender (Female) * Exploratory tendency: Information seeking	.143	.071	4.062*	.044	1.154
Constant	3.908	1.807	4.678*	.031	49.791

Omnibus χ *2* (15) = 25.101*, *p* >.05, R^2= .066(Cox & Snell), .093 (Negelkerke) *p<.05, **p< .01, ***p<.001 *T—95%* C.I. for EXP(B)

Logistic regression analysis shows that there is a significant influence of exploratory tendency subset Information seeking with the gender on the selection of information (χ 2 (15) = 25.101, p < .05). The model explained 9.3% variance in information selection (Negelkerke R) and was able to identify 72.6% cases accurately. The sensitivity of the model was 97.3%, and the specificity of the model was 15.3%. The exploratory tendency does not influence decision making; however, when gender interacts with the exploratory tendency of information seeking, the results show that for every unit increase in exploratory tendency subset information seeking for males (in comparison to females) the odds for using high information load is 1.154.

Table 8: *Logistic* table

Variables	*b [95%C.I. b]*	S.E.(*b*)	Wald	sig	Exp(*b*)
Desire for Predictability	.021	.053	.153	.696	1.021
Uncertainty Paralysis	.015	.055	.074	.785	1.015
Uncertainty Distress	-.122	.064	3.617*C	.057	.885
Inflexible Uncertainty Beliefs	-.077	.068	1.289	.256	.926
Gender (Female)	-1.652	1.210	1.863	.172	.192
Gender (Female) * Desire for Predictability	-.061	.075	.666	.414	.941
Gender Female) * Uncertainty Paralysis	.135	.083	2.664	.103	1.144
Gender (Female) * Uncertainty Distress	.003	.096	.001	.975	1.003
Gender (Female) * Inflexible uncertainty beliefs	-.003	.099	.001	.979	.997

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Constant	3.114	.924	11.352***	.001	22.519

Omnibus χ 2 (9) = 25.018, p >.05, R^2= .066 (Cox & Snell), .093 (Negelkerke) *p<.05, **p< .01, ***p<.001 *f—95%* C.I. for EXP(B)

A logistic regression analysis shows that there is a significant influence of uncertainty Distress on the selection of information (χ 2 (9) = 25.018, p < .05). The model explained a 9.3% variance in information selection (Negelkerke R) and was able to identify 70.1% of cases accurately. The sensitivity of the model was 96.1%, and specificity of the model was 9.9%. The results show that the overall model was fit, but the individual components were not significant. The close to significant result showed that every unit decrease in uncertainty distress the odd for decision making from high information load is .885.

The result suggests that for a product like mobile (consumable product), people prefer detailed information; however, people with tendencies associated with dislikes of uncertainty, ambiguity, and desire for predictability direct them to seek less information for decision making. This probably relates to 'process less to process better.' Also, though there was no significant gender difference for the desire for predictability, psychological tendencies appear to interact with gender in the decision-making process differently. There seems a positive relationship between the desire for predictability and seeking low information, but for men this is opposite; for men higher the desire for predictability, the more they seek more information. The information-seeking tendency was significantly more in women than men; however, higher the information-seeking tendency in men the more they seek information for decision making.

So, in conclusion, it can be said that generally, people look for lots of information in buying consumable products, especially men with a desire for predictability and information-seeking tendency. At the same time, probably for females the more they desire predictability, the lesser the amount of information they seek.

Study 2: Hotel Experiment

The hotel website named 'Backpackers' was created, and participants were asked to use the website for booking the room for a trip to Delhi. As the researches show that the price of a product is a significant determinant of choice; the manipulation of price with a mix of the alignable and non-alignable attributes is done. However, to give a range of choices three categories (with different price range) was created. To see the available hotel, participants use filters related to per page 'view options' and 'price filter.' Price filter contains three categories of hotels mentioned as 700-1800, 1800-3700 and 3700-4500. In each hotel category, there is a total of fourteen options; from 'view per page' filter, the user can choose the number of hotels presented on one page.

To observe the possibilities of the combined effect of product align ability and price range on the decision the manipulation of price, no. of alignable attribute present and no. of non-alignable attribute present is done. The fourteen hotels in each category are divided into two sets: 1) alignable only, 2) alignable, and non-alignable both. Similarly, value-wise there are three sets: basic, middle options, and fully loaded. These fourteen options contain three types of attributes: fixed, alignable and non-alignable. Fixed attributes are common for each category. Alignable attribute, where better version is added to options in increasing order, and the non-alignable, where a different attribute is added to an option which is not present in other option of the same category.

In the first category, 8 out of 14 options were alignable only, and five were an alignable and non-alignable mix. In this category, two alignable attributes were added to all options. In the first eight options, two attributes were added with an increasingly better version. In the next five options, the alignable attributes were repeated in the same manner, and one different non-alignable attribute was added with each option. The basic option means the lowest price with the lowest version of alignable attribute and least valued non-alignable attribute. Fully loaded option means highest price, the best version of an alignable attribute, and all non-alignable attributes added in other options. Middle option means: increasing higher price, better version of alignable attribute and more preferred non-alignable attribute. Further manipulation of price and alignability to create basic, middle and fully loaded options can be understood from the following table:

Table 9: Table explaining characteristic manipulation in experiment 2

BASIC -ALIGNABLE /NON ALIGNABLE OPTIONS
MIDDLE OPTIONS
FULLY LOADED ALIGNABLE/NON ALIGNABLE OPTIONS

Example of the category: 1

OPTION	PRICE	COMMON	COMMON	COMMON	ALIGNABLE	ALIGNABLE	NON ALIG	NON ALIGN	NON ALIGN	NON ALIGN	NON ALIGN

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NO.							ABLE	ABLE	ABLE	ABLE	ABLE
1	699	V	V	V	W1	X1					
2	759	V	V	V	W2	X2					
3	859	V	V	V	W3	X3					
4	899	V	V	V	W4	X4					
5	999	V	V	V	W5	X5					
6	899	V	V	V	W6	X6					
7	1009	V	V	V	W7	X7					
8	1099	V	V	V	W8	X8					
9	1399	V	V	V	W9	X9	A				
10	1369	V	V	V	W10	X10		B			
11	1388	V	V	V	W11	X11			C		
12	1376	V	V	V	W12	X12				D	
13	1389	V	V	V	W13	X13					E
14	1799	V	V	V	W14	X14	A	B	C	D	E

Table 10: *Chi-square* table information load and factor wise

	Cluster Number of Case		
	Low information	High information	Chi-Square
Alignable basic	29(100.0%)	0(0.0%)	368.000***
Alignable fully loaded	47(100.0%)	0(0.0%)	
Non alignable basic	(100.0%)	9(0.0%)	
Non alignable fully loaded	0(0.0%)	87(100.0%)	
Alignable compromise	136(0.0%)	0(100.0%)	
Non alignable compromise	0(0.0%)	60(100.0%)	

*p<.05, **p< .01, ***p<.001

Table 11: *Chi-squared*tableGender wise

			X^2
Gender	Low information	High information	
Female	85(51.5%)	80(48.5%)	4.55***
Male	127(62.6%)	76(37.4%)	

*p<.05, **p< .01, ***p<.001

Table 12: *t* table personality factor and hotel information load

Personality factor	Number of Case	N	Mean	Sd	t	p	D^2
Need for closure: Order	Low information	212	35.00	6.008	-.459	.646	.048
	High information	156	35.29	5.961			
Need for closure: Predictability	Low information	212	25.79	5.618	-.326	.744	.034
	High information	156	25.97	4.791			
Need for closure: Decisiveness	Low information	212	19.52	3.955	-1.318	.188	.139
	High information	156	20.07	3.904			
Need for closure: Ambiguity	Low information	212	31.42	4.980	.142	.887	.014
	High information	156	31.35	4.835			
Need for closure: Close-mindedness	Low information	212	20.10	3.430	.990	.323	.103
	High information	156	19.72	3.890			
Total need for closure	Low information	212	131.844	15.12348	-.354	.723	.037
	High information	156	132.410	15.16697			
Exploratory tendency:	Low information	212	17.98	3.290	-.504	.614	.054

Repetitive behaviour proneness	High information	156	18.15	2.887			
Exploratory tendency: Innovativeness	Low information	212	28.55	4.237	.906	.365	.095
	High information	156	28.16	3.898			
Exploratory tendency: Risk taking	Low information	212	26.04	3.375	.874	.383	.093
	High information	156	25.73	3.267			
Exploratory tendency: Exploratory through shopping	Low information	212	22.32	3.543	-1.031	.303	.109
	High information	156	22.69	3.234			
Exploratory tendency: Interpersonal communication	Low information	212	9.50	1.682	-.483	.629	.046
	High information	156	9.58	1.789			
Exploratory tendency: Brand switching	Low information	212	22.00	3.332	-.780	.436	.082
	High information	156	22.28	3.422			
Exploratory tendency: Information seeking	Low information	212	37.49	4.563	-.530	.596	.055
	High information	156	37.74	4.398			
Total Exploratory tendency	Low information	212	163.877	17.18437	-.264	.792	.026
	High information	156	164.333	15.14035			
Intolerance uncertainty scale: Desire for Predictability	Low information	212	21.96	5.109	-.976	.330	.104
	High information	156	22.47	4.627			
Intolerance uncertainty scale: Uncertainty Paralysis	Low information	212	17.36	4.807	-.893	.372	.095
	High information	156	17.81	4.595			
Intolerance uncertainty scale: Uncertainty Distress	Low information	212	14.50	4.084	-.264	.792	.026
	High information	156	14.61	4.095			
Intolerance uncertainty scale: Inflexible Uncertainty Beliefs	Low information	212	11.42	3.252	-.672	.502	.076
	High information	156	11.65	3.212			
Intolerance uncertainty scale: Total	Low information	212	65.2453	15.18936	-.837	.403	.088
	High information	156	66.5385	13.88821			
Impulsivity: non-planning impulsiveness	Low information	212	19.53	4.342	2.312	.021	.244
	High information	156	18.47	4.337			
Impulsivity: Cognitive Impulsiveness	Low information	212	12.39	2.771	.488	.626	.053
	High information	156	12.25	2.501			
Impulsivity: Motor Impulsiveness	Low information	212	19.43	4.245	-.004	.997	.002
	High information	156	19.44	4.090			
Impulsivity: total impulsiveness	Low information	212	21.98	5.042	1.979	.049	.208
	High information	156	20.90	5.316			

*p<.05, **p< .01, ***p<.001

Statistically, all alignable options formed a low information category, and non-alignable options formed a high information category. The chi-square results show that there is not much difference for females in decision making from low or high information choices, but males were making significantly more decision from low information choices. Similarly, the psychological tendencies were also not creating much of the difference in decision making; only individuals high on non-planning impulsiveness (t=2.31, p<.021) and total impulsivity (t=1.979, p<.049) were using low information for decision making.

Table 13: *Logistic* table

Variable	***b* [95%c.i. *B*]**	**S.E.(*b*)**	**Wald**	**Sig.**	**Exp(*b*)**
Desire for predictability	.002	.046	.001	.970	1.002
Uncertainty paralysis	.061	.050	1.516	.218	1.063
Uncertainty distress	-.103	.057	3.258	.071	.902
Inflexible uncertainty beliefs	-.002	.060	.001	.974	.998

Gender (Female)	-1.303	1.037	1.578	.209	.272
Gender (Female)*Desire for predictability	.045	.068	.447	.504	1.046
Gender (Female)* uncertainty paralysis	-.112	.076	2.165	.141	.894
Gender (Female)* uncertainty distress	.173	.088	3.901	.048	1.189
Gender (Female)* inflexible uncertainty beliefs	.017	.091	.035	.853	1.017
Constant	-.101	.723	.020	.889	.904

Omnibus χ *2* (9) = 13.824, *p*>.05, *R* ^{2}= .037(Cox & Snell), .050 (Negelkerke) *p<.05, **p< .01, ***p<.001 *‡—95%* C.I. for EXP(B)

A logistic regression analysis shows that there is no significant influence of exploratory tendency. However, intolerance for uncertainty and impulsivity were significant predictors. A logistic regression analysis shows that there is a significant influence of intolerance of uncertainty on the selection of information (χ 2 (9) = 13.824, p >.05). The model explained 5% variance in information selection (Negelkerke R) and was able to identify 62.8% of cases accurately. The sensitivity of the model was 34%, and the specificity of the model was 84%. The result showed that with every unit increase in uncertainty distress for males (in comparison to females) the odd for a decision from high information load is 1.189.

Table 14: *Logistic* table

Variable	***b [95%c.i. B]***	**S.E.(*b*)**	**Wald**	**Sig.**	**Exp(*b*)**
Non planning impulsiveness	-.065	.085	.595	.441	.937
Cognitive impulsiveness	-.100	.068	2.199	.138	.905
Motor impulsiveness	.069	.042	2.663	.103	1.071
Total impulsiveness	.034	.072	.222	.638	1.035
Gender (Female)	.916	1.303	.494	.482	2.501
Gender (Female)*non-planning impulsiveness	-.068	.124	.298	.585	.934
Gender (Female)*cognitive impulsiveness	.222	.103	4.624	.032	1.249
Gender (Female)*motor impulsiveness	-.074	.061	1.451	.228	.929
Gender (Female)* total impulsiveness	-.019	.105	.033	.855	.981
Constant	-.148	.874	.029	.866	.863

Omnibus χ *2* (9) = 18.801, *p*<.05, *R* ^{2}= .050(Cox & Snell), .067 (Negelkerke) *p<.05, **p< .01, ***p<.001 *‡—95%* C.I. for EXP(B)

A logistic regression analysis shows that there is a significant influence of impulsivity on the selection of information (χ 2 (9) = 18.801, p <.05). The model explained 6.7% variance in information selection (Negelkerke R) and was able to identify 60.9% cases accurately. The sensitivity of the model was 32.1%, and the specificity of the model was 82.1%. The result showed that for every unit increase in cognitive impulsivity in males (in comparison to females) the odd for making a decision from high information load is 1.249.

It is clear from results that when it comes to decision making for service products (hotel booing) males prefer to process less information, and the same applies to people with high impulsivity. However, males with tendencies to avoid uncertainty and high on cognitive impulsiveness look for more information for making the decision.

GENERAL DISCUSSION

The present study was conducted to understand the gendered information processing and influence of psychological tendencies in online decision making. The results indicate that information processing related psychological tendencies do have a significant influence over decision making and it also interacts with gender. The interaction appears to be complicated and differs from the content of the decision to be made. It appears that the decision for consumable products and service product are processed differently and get influenced by different factors. This reflects that understanding any behavior requires taking an individual in its totality as much as possible; the fragmented approach does not give an accurate picture of reality. The broader view as reflected by the findings of both the studies relates to the different strategies used by males and females in the same situation in addition to the interactive effect of their psychological tendencies. For example, information seeking is more in women, but this tendency influences decision-making process in men only.

Similarly, the desire for predictability influences information processing differently in men and women. Where for men, the higher this tendency, the more they try to satisfy it by looking for more information, but for women, the higher this tendency the less information they seek. So probably women satisfy this need by narrowing the options field whereas, men satisfy it by

expanding the options field. The service product where uncertainties are higher, it is understandable that people prefer limited information, 'process less-process better' strategy. However, at the same time, males appear to avoid uncertainty by expanding the options field whereas women do not follow this strategy. This strategy seems to get even more strengthen if impulsivity is higher in male decision-makers.

Similarly, more information was sought for consumables and less for service products, but men with certain psychological tendencies sought more information for all kinds of products. Probably it can be said that women work with 'process less to process better' strategy, whereas males with certain psychological tendencies work with 'process more to get better' strategy. This strategic difference should influence the gender difference in the amount of information leading to information overload. This assertion was supported in our previous publication. The initial analysis of study one experiment (as reported in Maidullah & Sharma, 2019) clearly showed that majority of females were making their decision from 8x8 (8 options with eight attributes) category whereas, males were making their decision from 12x12, 12x8, and 8x12 category respectively and the difference was significant.

In addition to providing insight into gender and psychological tendency's role in online decision making, present work also provides insight into the debate of information measurement (Huang, 2000). It is clear that beyond the understanding by Miller (1956), Bettman (1979) or Lee and Lee (2004) information with more than four choices or attributes forms the high information load, which is taxing on the mental operation. Similarly, the non-alignable attributes are more taxing and create a high information load.

CONCLUSION

Findings from present work fill the gap in information processing limit debate. Information measurement should include not the only number of options provided but also the amount of information provided in each option. Similarly, the findings provided insight into the probable differential strategy to information processing and added an answer to the information measurement debate. It is clear that even with similar psychological tendencies men and women use different strategies, **'process less to process better'** and **'process more to get better'** in online decision making.

Limitation and Study forward: Present study findings are limited due to the product category involved. As the findings clearly show that people process service products and consumables in different way future work should include more products in each category and then compare the trend of results. Similarly, further work can look for ways to understand individuality in online decision making more holistically and in a more realistic scenario.

The practical implication of the Study: Understanding decision making features of Indian consumers can not only contribute to the understanding of the naturalistic decision-making process itself but also can provide inputs to the market researchers, designers, and policymakers. Identifying typical strategies adopted by both the genders may help in marketing strategies at different platforms. The study also adds to methodological rigor by using the computerised task in combination with questionnaire thus future studies in Psychological Science and Management studies should take this into consideration.

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