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Prioritizing the Components of Online Environment to Assess Customer Experience:
An Interpretive Structural Modeling Approach

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ABSTRACT

The present study aims to identify and prioritize the components of customer experience in online environment. The study employs Pareto analysis and interpretive structural modeling (ISM) to accomplish above-mentioned objective. Firstly, 36 components have been derived from extensively reviewed literature, and out of them, 15 were finalized as vital few variables having 80% influence in creating customer experience in online environment. To assess the impact of these 15 components, one outcome component 'Customer Experience (Flow)' has been added. So, an ISM technique is applied on a total of 16 components of customer experience in online environment. The aim of this technique is to highlight the interrelationships among the components and to prioritize them. Further, the findings are strengthened by using MICMAC analysis. Results revealed that time distortion, skill, focused attention, interactivity, playfulness, start web, and involvement are found to have weak dependence powers but with strong driving powers. However, control, challenge, arousal, telepresence, flow, positive affect, and exploratory behavior were found to possess weak driving power and strong dependence power. The results of the present study carry implications for academicians and marketers handling online experience of their customers.

KEYWORDS

Customer Experience, Flow Theory, Interpretive Structural Modeling, MICMAC Analysis, Online Environment, Pareto Analysis

1. INTRODUCTION

Web has created a novice environment for its users including entertainment, exploration, communication, and learning (Huang, 2003). These features of web have influenced digitalized economy, resulting the increased activities of consumers on internet, be it searching or shopping. However, understanding consumer behavior on web is bit difficult due to transformed role of business and consumers on web environment. This transformation has converted all business houses into online stores and influenced people to become an aware customer. Furthermore, It has been observed that

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customer experience in offline environment is greatly affected by the time spend in store, contact/ interaction with employees, and the way offerings are presented. However, online environment provides customers an opportunity to compare the offerings on the basis of value and profit before making final decision.

Recent literature has cited experience as a vital factor persuading purchase among customers due to its influence on customer's heart and mind (Klaus, 2013). As online environment facilitates the companies to reach the mass in one go, identification and prioritization of components describing online customer experience is considered as need of the hour (Martin et al., 2015). This need of understanding the experience of consumers on online environment have been emerged as very important topic of study (Straub and Watson 2001; Kaufaris, 2002; Lemon and Verhoef, 2016) due to its direct linkage with customer satisfaction and customer loyalty (Court et al., 2009; Lemon and Verhoef, 2016). Thus, in order to identify all those underlying components which directly or indirectly influences the most important component of customer experience are identified and explained through Pareto analysis. Pareto analysis helps in identifying the most important component or factor for the study by ranking variables according to their occurrence in the literature. In such situation, it has become mandatory for the authors to identify some kind of structural relationship among all the components to make it easier for organizations to clearly distinguish between components, having direct and indirect impact on the outcome components of customer experience in online environment.

This type of structural relationship helps the organizations not only in managing the scarce resources but also in handling the contingent situations in effective and efficient manner. Though, various researches have conceptualized the customer experience through exploratory research (Brakus, Schmitt, and Zarantonello 2009; Verhoef et al. 2009), but very few have empirical tested this concept of customer experience in online environment (Lemon and Verhoef, 2016). Thus, the goal of this investigation identifying, prioritizing, and defining the components of online environment to establish better understanding of the concept of customer experience.

The extensive review of literature has helped the authors in identifying the appropriateness of interpretive structural modeling (ISM) in investigating such type of research problems. In ISM, the judgment group of experts, structure the complex relationship among the variables of study. This technique of ISM has been adopted and confirmed by many researchers to establish interrelationship among different variables (Khan, 2015; Lin and Yeh, 2013; Sharma and Gupta, 1995; Singh et al., 2003; Thakkar et al., 2005; Thakkar et al., 2008). As far as the necessity of study is concerned, numerous studies have explained different constructs of customer experience in online setting (Ghani, 1991; Novak et al., 2003; Bilgihan et al., 2014; Bilgihan et. al., 2016), but, as per author's knowledge, none has worked simplifying the interrelationship of components of customer experience in online environment. Thus, present study tried to contribute in both, extending the existing knowledge by identifying and defining the components of customer experience in online environment and adding new knowledge by prioritizing those components using statistical tools i.e. Pareto analysis and Interpretive Structural Modeling (ISM)) never applied together.

As far as the structure of paper is concerned, the paper begins with introduction followed by theoretical background and literature review. Then, Pareto analysis and Interpretive Structural Modeling (ISM) have been applied to provide an initial model comprising of the components of customer's online experience. Further, the findings are strengthened through MICMAC Analysis. Lastly, the papers ended with results and managerial implications.

2. LITERATURE REVIEW AND CONCEPTUALIZATION

2.1. Customer Experience in Online Environment

Various authors have provided their views on customer experience in online environment. Rose et al. (2012) defined it as "a psychological state, manifested as a subjective response to the e-retailers'

website". Similarly, Klaus (2013) explained it as "the customers overall mental perception of their interaction with the online service provider and other customers expressed in its dimensions of functionality and psychological factors". Trevinal and Stenger (2014) expounded it as "a complex, holistic and subjective process resulting from interactions between consumers and the online environment".

Earlier, the consumers were used to aspire for utilitarian benefits while shopping online. In addition to it, price and availability were the only factors influencing competition among companies (Bridges and Florsheim, 2008). However, now-a-days consumers also look for hedonic benefits like fun and enjoyment along with utilitarian benefits. Hedonic benefits define experience of customers that affect their intention to purchase products or services online. Besides these, customers experience and satisfaction is also being defined by customer's post-purchase shipping/tracking experience (Cao et al., 2018).

On online platforms, customers act as consumers as well as internet users which also make them co-creators (Elsharnouby and Mahrous, 2015). The reason for such importance is customer's instant involvement in the activity of shopping online. Hence, it becomes very important to study customer experience on online platforms (Novak et al., 2000; Bilgihan et al., 2014). Drawing on these extracts from literature, present study aimed at identifying, prioritizing, and defining the components of online environment to establish better understanding of the concept of customer experience.

2.2. Conceptualization: Flow Theory

Flow was initiated by Csikszentmihalyi (1975), as "the holistic sensation that people feel when they act with total involvement" and "ordered, negentropic state of consciousness" (Csikszentmihalyi, 1988). In 1997, Csikszentmihalyi has contributed eight components of flow, listed as clear goal, feedback, challenges match skills, concentration and focus, control, loss of self-consciousness, transformation of time, and autotelic. Flow makes people completely involved in their activity in such a way that they their lose self- consciousness (Csikszentmihalyi and LeFevre, 1989 as stated in Gao and Bai, 2014). Hoffman and Novak (1996) have extended the application of flow and employed it to study customer experience in computer-mediated online environment.

Hoffman and Novak (1996) have employed this construct of flow to study experience of customer in online environment. Further, they explained flow as a cognitive state determined by constructs such as level of skills and challenges, focused attentions, telepresence and interactivity. Csikszentmihalyi (1997) has characterized this cognitive state as "optimal experience". Huang et al. (2012) have expounded the concept of flow as "pleasant experience that people feel when acting with total involvement and immersed with the activity". Two characteristics have been identified explaining the concept of flow, i.e. (i) "total concentration in an activity" and (ii) "the enjoyment which one derives from an activity". This theory highlights the motivation of human to use computer or internet. Further, the theory describes human behavior with the help of situational variables (Ghani and Deshpande, 1994). Drawing on these aspects, the concept of flow had been employed by researchers to understand customer experience in online environment (Novak et al., 2000; Ding et al., 2011; Huang et al., 2012; Rose et al., 2012; Teng et al., 2012; Bilgihan et al., 2014). Marketers also acquainted with the fact that customer will visit website frequently and make repeat purchase in presence of flow (Bridges and Florsheim, 2008). Drawing on these findings, it can be concluded that flow results in generating prolific intentions of customer to make online purchase.

3. IDENTIFICATION AND CHOICE OF COMPONENTS

Following previous studies, different components were identified influencing customer's experience in online environment. The approach employed by Muruganantham and Priyadharshini (2017) was used to filter the literature. In the beginning, 131 papers have been found after employing a title based search on various research databases and 69 papers found suitable to the topic of the study.

After further screening, 43 studies have been found mentioning the components of online consumer experience. After reviewing these 43 studies, 36 components were found directly associated with customer experience in an online environment which is cited in Table 1. But after reviewing Table 1, it has been identified that all 36 components are not equally important to consider for this study. So, to finalize the components, Pareto analysis is applied on all the 36 components.

Pareto analysis is a "quality control tool that ranks data, in descending order, from the highest frequency of occurrences to the lowest frequency of occurrences" (Fotopoulos et al., 2011). Pareto analysis is being applied to identify which task or factor is most impactful. It ranks variables according to their frequency, those having highest occurrence in literature. This technique defines variable/ components as vital few and useful many. "The vital few items occupy a substantial amount (80 percent) of cumulative percentage of occurrences and the useful many occupy only the remaining 20 percent of occurrences, which is also known as the 80-20 rule developed by the Italian Economist Vilfredo Pareto" (Karuppusami and Gandhinathan, 2006). "The value of the Pareto principle is that it emphasizes the need to focus first on the 20 per cent of the causes that matter, without of course totally ignoring the remaining 80 percent" (Fotopoulos et al., 2011).

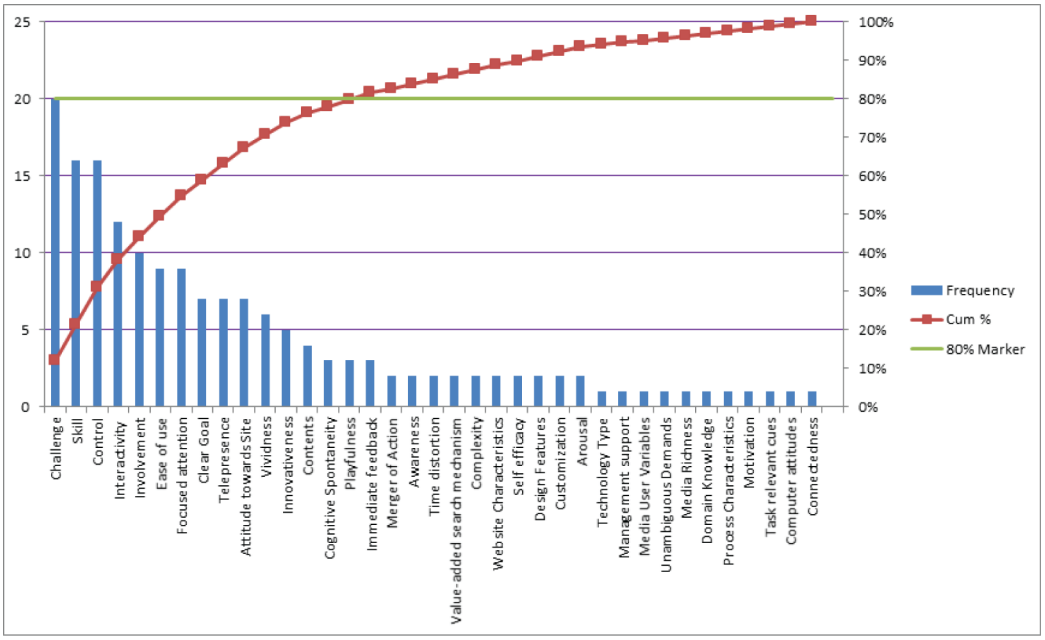
Pareto analysis has been applied to numerous areas such as major reasons of complaints from customer, quality control, problem in impactful tasks in a project, and profitable products and services (Talib et al., 2010). Considering all these facets, authors have considered Pareto analysis an appropriate tool for identifying and ranking factors explaining customer experience in online environment. In present study, results of Pareto analysis have been explained with the help of Pareto chart. Frequency and occurrence of all 36 components has been presented in Pareto chart in Figure 1.

Based on Pareto chart in Figure 1, it can be easily identified that 15 components have been occurred 80% of times. These variables are the 'vital few' variables, having maximum role in affecting customer experience in online environment and remaining 21 components are representing 'useful many' variables. The vital few components have been identified and segregated with the help

Table 1. Literature review

Components	Ghani, (1991)	Trevino & Webster, (1992)	Ghani & Deshpande, (1994)	Ghani (1995)	Hoffman& Novak (1996)	Lombard and Ditton (1997)	Agarwal & Karahanna (2000)	Chen et al., (2000)	Novak et al., (2000)	Agarwal & Karahanna, (2000)	Coyle & Thorson, (2001)	Rettie (2001)	Koufaris (2002)	Luna et al., (2002)	Huang, (2003)	Klein, (2003)	Luna et al., (2003)	Noval et al., (2003)	Mathwik and Rigdon, (2004)	Chung and Tan, (2004)	Hsu and Lu, (2004)	Jiand and Benbasat (24)	Pace, (2004)	Pilke (2004)	Reid, (2004)	Skadberg & Kimmel (2004)	Fortin and Dholakia (2005)	Kim et al., (2005)	Chen, (2006)	Li and Browne (2006)	Shin, (2006)	Tung et al., (2006)	Bridges & Florsheim, (2008)	Park et al., (2008)	Hoffman and Novak (2009)	Parboteeah et al., (2009)	Ho and Kuo, (2010)	Xin ding et al., (2010)	Chiang et al., (2011)	Sharkey et al., (2012)	Rose et al., (2012)	Zhou, (2013)	Martin et al., (2015)
Skill	1	1			1				1			1	1	1			1	1					1			1		1			1		1		1			1				
Control	1		1	1				1	1					1		1	1	1	1			1		1							1		1				1			1		
Challenge	1		1	1	1				1			1	1	1				1	1				1	1		1		1			1		1				1			1		1
Technology Type		1																																								
Ease of use		1								1									1		1					1									1	1					1	1
Management support		1																																								
Cognitive Spontaneity				1																				1					1													
Interactivity					1	1			1		1				1		1								1	1						1		1			1				1	
Vividness					1	1			1		1															1								1								
Clear Goal					1			1				1						1					1	1					1													
Experiential Involvement					1				1				1					1	1													1	1		1					1		1
Focused attention					1				1					1			1			1			1					1							1							
Telepresence					1				1		1																						1	1						1		1
Contents						1																													1	1					1	
Media User Variables						1																																				
Innovativeness							1			1					1			1																1								
Playfulness							1			1																												1				
Immediate feedback												1												1					1													
Merger of Action								1																					1													
Awareness								1																					1													
Time distortion									1																								1									
Value-added search mechanism													1	1																												
Unambiguous Demands														1																												
Attitude towards Site									1					1			1		1										1							1							
Complexity															1									1																		
Media Richness																1																										
Website Characteristics																			1						1																	
Self efficacy										1															1																	
Domain Knowledge																									1																	
Process Characteristics																																	1									
Motivation																																		1								
Task relevant cues																																			1							
Computer attitudes																																				1						
Design Features																																								1		1
Customization																															1											1
Connectedness																																										1
Arousal									1																								1									

Figure 1. Pareto Chart



of a Pareto line chart. Following the Pareto chart, Table 2 has been prepared to report occurrence, percentage, and cumulative percentage of all 36 components.

These identified 15 components are: challenge, skill, control, interactivity, involvement, ease of use, focused attention, clear goal, telepresence, attitude towards site, vividness, innovativeness, contents, cognitive spontaneity, and playfulness. The definitions of each of the identified components have been given in Table 3.

In the further section, ISM (Interpretive Structural Modeling) technique has been applied on the selected 15 components and to assess the impact of these components, an outcome component i.e. customer experience (flow) has been added. Thus, ISM technique and MICMAC analysis is applied on total 16 components in order to assess customer experience in online environment.

4. ISM METHODOLOGY

Interpretive Structural Modeling (ISM) was coined by Warfield in 1974 for the purpose of compound researches (Dalvi-Esfahani et al., 2017). It is a group learning interactive method which aims to resolve the complexity of the problems into structured format. This method helps the decision makers to arrange the variables into hierarchical format. This methodology helps us to identify the interrelationship among the variables and the judgment group structures the complex relationship among the variables. This interrelationship among the variables can be portrayed with the help of directed graph i.e. diagraph. The diagraph is very useful in transforming the ambiguous and inadequate mental models into the well-defined visible model (Garg et al., 2011). Now-a-days, this modeling technique is adopted by various researchers in different application areas few are depicted in Table 4.

In this methodology, initially different variables related to the problem were identified from literature review. Further the contextually related subordinate relationship is identified. Next, the Structured Self-Interaction Matrix (SSIM) is developed which is based on the pairwise comparison of variables. Following to it, the SSIM is transformed to initial reachability matrix and with the inclusion of transitivity the initial reachability matrix in converted into final reachability matrix. Lastly, the

Table 2. Components defining customer experience in online environment

Component	Occurrence	Percentage	Cumulative Percentage
Challenge	20	11.9047619	11.9047619
Skill	16	9.523809524	21.42857
Control	16	9.523809524	30.95238
Interactivity	12	7.142857143	38.09524
Involvement	10	5.952380952	44.04762
Focused attention	9	5.357142857	49.40476
Ease of use	9	5.357142857	54.7619
Telepresence	7	4.166666667	58.92857
Clear Goal	7	4.166666667	63.09524
Attitude towards Site	7	4.166666667	67.2619
Vividness	6	3.571428571	70.83333
Innovativeness	5	2.976190476	73.80952
Contents	4	2.380952381	76.19048
Playfulness	3	1.785714286	77.97619
Immediate feedback	3	1.785714286	79.7619
Cognitive Spontaneity	3	1.785714286	81.54762
Website Characteristics	2	1.19047619	82.7381
Time distortion	2	1.19047619	83.92857
Self-efficacy	2	1.19047619	85.11905
Search mechanism	2	1.19047619	86.30952
Merger of Action	2	1.19047619	87.5
Design Features	2	1.19047619	88.69048
Customization	2	1.19047619	89.88095
Complexity	2	1.19047619	91.07143
Awareness	2	1.19047619	92.2619
Arousal	2	1.19047619	93.45238
Unambiguous Demands	1	0.595238095	94.04762
Technology Type	1	0.595238095	94.64286
Task relevant cues	1	0.595238095	95.2381
Process Characteristics	1	0.595238095	95.83333
Motivation	1	0.595238095	96.42857
Mgmt. sup.	1	0.595238095	97.02381
Media User Variables	1	0.595238095	97.61905
Media Richness	1	0.595238095	98.21429
Domain Knowledge	1	0.595238095	98.80952
Connectedness	1	0.595238095	99.40476
Computer attitudes	1	0.595238095	100

Table 3. Definition of Vital few components

Component	Definition
Challenge	"Consumer's opportunities for action on the web" (Novak, Hoffman, and Yung, 2000)
Skill	"Web consumer's capacity for action during the online navigation process and control taps the consumer's ability vfor action" (Novak, Hoffman, and Yung, 2000)
Control	"Includes web user's perception of her ability to successfully navigate through web environment and her perception of how the web responds to her inputs" (Novak, Hoffman, and Yung, 2000)
Interactivity	"The extent to which users can participate in modifying the form and content of a mediated environment in real time" (Steuer, 1992).
Involvement	"When people enjoy what they are doing during optimally challenging activities" (Wild et al., 1995)
Ease of use	"The degree to which a person believes that using a particular system would be free of effort" (Ong et al., 2004)
Focused attention	"Centering of attention on a limited stimulus field" (Csikszentmihalyi, 1977)
Clear goal	"When the respondent has a distinct or identifiable purpose for their browsing" (Novak and Hoffman, 2003)
Telepresence	"The compelling sense of being present in a mediated virtual environment" (Kim and Biocca, 1997)
Attitude towards Site	"Predispositions to respond in a particular way towards a particular object or class of objects in a consistently favourable or unfavourable way" (Hassanein and Head, 2007)
Vividness	"The representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses" (Steuer, 1992)
Innovativeness	"Symbolizing the risk taking propensity that exists in certain individuals and not in others" (Agarwal and Prasad, 1998; Lu et al., 2005)
Contents	"The degree to which a medium can be said to be interactive depends on a number of subsidiary variables" (Lombart and Ditton, 1997)
Cognitive Spontaneity	"An individual interact playfullly with individual computers" (Ghani, 1995)
Playfulness	"Intrinsic enjoyment that comes from engaging in activities that are absorbing, to the point of offering an escape from the demands of the day-to-day world" (Mathwick et al., 2001)

partitioning of reachability matrix is done and finally the ISM model is derived. In this study, ISM is applied to highlight the interrelationships among the components of online environment in order to assess the customer experience.

5. MODEL DEVELOPMENT AND FINDINGS

The development of model starts from identification of different components of online environment which directly or indirectly affects customer experience. With the help of group of experts, a contextual relationship among the components was established. This process was completed in three brainstorming sessions. In initial sessions, the literature related to the research problem was given to the members of the expert group and total 16 components of online environment which affects

Table 4. Application Areas of ISM

S. No.	Contributors	Area in which ISM has been applied
1.	Hawthorne and Sage (1975)	Planning related to educational program
2.	Jedlicka and Mayer (1980)	Cross-cultural interaction
3.	Saxena and Vrat, (1990)	Selection of vendor.
4.	Mandal and Deshmukh, (1994)	Conservation of energy in cement industry.
5.	Sharma et al., (1995)	Management of wastage in India
6.	Singh et al., (2003)	Knowledge management
7.	Qureshi et al., (2007)	Modeling outsourcing relationship in logistics
8.	Kannan and Haq (2007)	Built-to-order supply chain environment
9.	Qureshi et al., (2008)	Selection process involved in third party logistics (3PLs)
10.	Raj et al., (2008)	Flexible manufacturing system
11.	Garg et al., (2011)	Modeling the customer experience factors

customer experience were finalized. In the last session, the interrelationship among these components was identified and through which the ISM model was developed. The development procedure of the ISM model is presented in Figure 2.

5.1 Structural Self-Interaction Matrix (SSIM)

The SSIM is obtained from the interrelationship among the components which was finalized by the expert's panel in brainstorming sessions. To obtain this matrix, the directional relationship i.e. which component leads to which other component, is identified through four different notations. These notations can be described with the help of two variables say *x* and *y* (as x<y):

V: Variable *x* will help to achieve variable *y*
A: Variable y will help to achieve variable x
X: Variable *x* and *y* will be helping to achieve each other and
O: Variable *x* and *y* are not related to each other

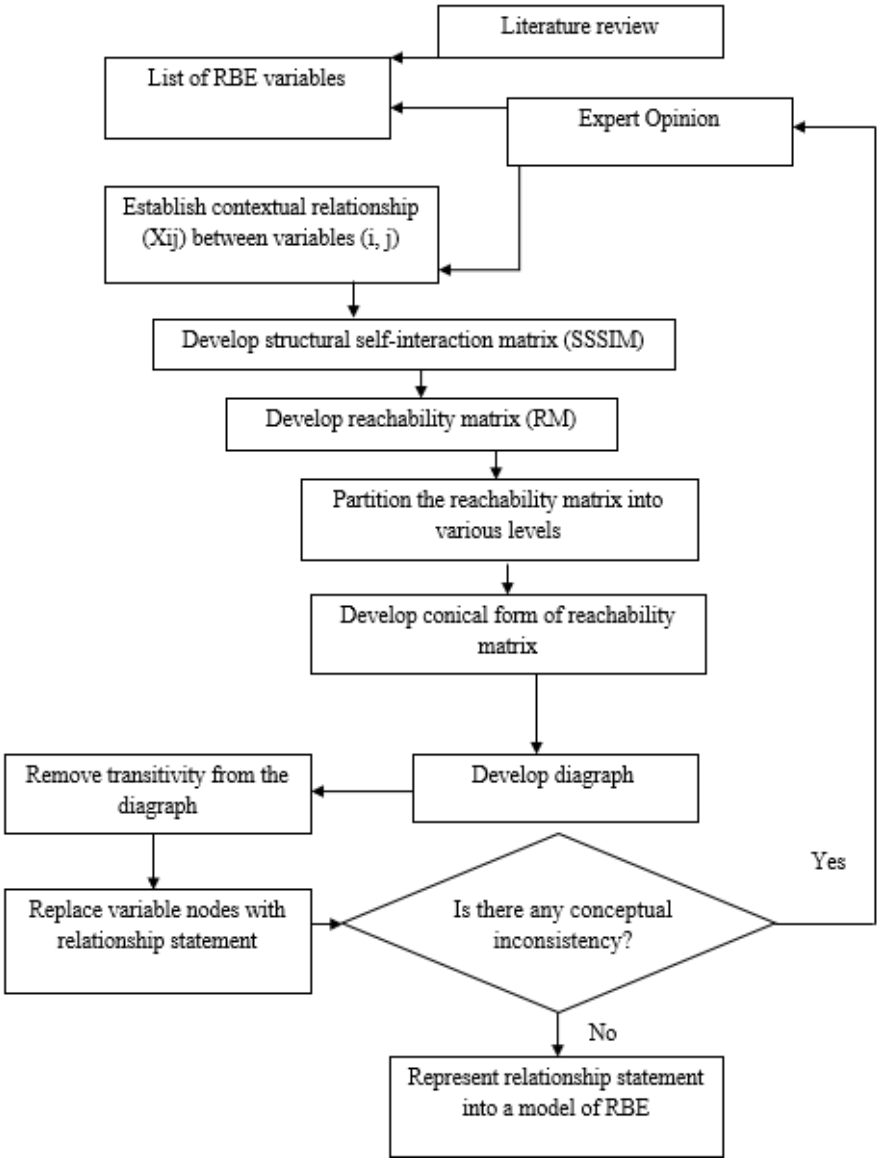
Based on the above notations, the SSIM is developed for the 16 components of online environment affecting customer experience. The SSIM is depicted in Table 5, the details are as follows:

- Component 1 will help to achieve component 13 i.e.(V)
- Component 3 will help to achieve component 15 i.e. (A)
- Component 3 and 6 will be helping to achieve each other i.e.(X); and
- Component 8 and 16 are not related to each other i.e.(O)

5.2 Reachability Matrix

This matrix is used to derive an initial reachability matrix and a final reachability matrix. In initial reachability matrix, the transitivity among the components is not incorporated whereas in final reachability matrix the transitivity in incorporated. The initial reachability matrix can be obtained by replacing the SSIM notations i.e. V, A, X and O with the binary notations 0 and 1. The replacement rules are as follows:

Figure 2. Flow diagram for preparing ISM model (Source: Kannan et al. (2009))



- If the (x, y) entry in the SSIM is V, then this entry in the initial reachability matrix will become 1 and the (y, x) entry will become 0.
- If the (x, y) entry in the SSIM is A, then this entry in the initial reachability matrix will become 0 and the (y, x) entry will become 1.
- If the (x, y) entry in the SSIM is X, then this entry in the initial reachability matrix will become 1 and the (y, x) entry will also become 1.
- If the (x, y) entry in the SSIM is O, then this entry in the initial reachability matrix will become 0 and the (y, x) entry will also become 0.

Table 5. Structural Self-Interaction Matrix (SSIM)

Sr. No.	Components	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
1.	Clear Goals	A	A	A	V	A	A	O	A	A	A	A	O	X	A	A
2.	Skill	O	A	O	V	O	A	O	A	O	O	V	V	V	V	
3.	Control	A	A	A	V	O	A	O	A	O	A	X	V	V		
4.	Telepresence	A	A	A	V	A	A	A	A	A	A	A	A			
5.	Ease of use	A	A	A	V	A	A	A	O	A	A	A				
6.	Focused Attention	A	A	A	V	A	A	O	A	A	A					
7.	Interactivity	A	A	O	V	A	A	V	A	A						
8.	Innovativeness	O	O	O	V	O	O	V	O							
9.	Challenge	O	A	O	V	O	A	V								
10.	Cognitive Spontaneity	O	O	A	V	A	O									
11.	Contents	O	A	O	V	O										
12.	Playfulness	O	O	O	V											
13.	Customer Experience (Flow)	A	A	A												
14.	Vividness	A	O													
15.	Involvement	O														
16.	Attitude towards site															

According to these rules the initial reachability matrix is obtained shown in Table 6.

Now, to obtain the final reachability matrix, the transitivity among the 16 components of online environment is incorporated. Transitivity is the relationship among the three components in such a way that if first component relates to second component and second component relates to third component than definitely there will be the relationship between the first and the third components i.e. if $x \rightarrow y$, $y \rightarrow z$ than $x \rightarrow z$. In this study, the transitivity is represented by 1^a, along with the inclusion of transitivity the driving and dependence power of each component is also computed shown in Table 7. These powers will be utilized in the MICMAC analysis which is done in the later part of this paper.

5.3 Level Partitions

In this step, the final reachability matrix is partitioned into different levels. According to Warfield, (1974), the two sets i.e. the reachability set and the antecedent set is obtained for each component. The reachability set for each component possess i) the component itself; ii) the other components which may help to acquire. Likewise, the antecedent set for each component possess i) the component itself; ii) the other component which may help in acquiring it. Further the intersection set is achieved by the intersection component present in both reachability and antecedent set. If the component of reachability and antecedent matches than that particular level is assigned as the topmost level in the ISM model. This process continues until the lowermost level of the ISM model is not identified. The level partitioning of the top level is shown in Table 8. The result of all the iterations done to achieve different levels in ISM hierarchy is shown in Table 9.

Table 6. Initial Reachability Matrix

Sr. No.	Components	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	Clear Goals	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
2.	Skill	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0
3.	Control	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0
4.	Telepresence	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
5.	Ease of use	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0
6.	Focused Attention	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0
7.	Interactivity	1	0	1	1	1	1	1	0	0	1	0	0	1	0	0	0
8.	Innovativeness	1	0	0	1	1	1	1	1	0	1	0	0	1	0	0	0
9.	Challenge	1	1	1	1	0	1	0	0	1	1	0	0	1	0	0	0
10.	Cognitive Spontaneity	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0
11.	Contents	1	1	1	1	1	1	1	0	0	1	1	0	1	0	0	0
12.	Playfulness	1	0	0	1	1	1	1	0	0	1	0	1	1	0	0	0
13.	Customer Experience (Flow)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
14.	Vividness	1	0	1	1	1	1	0	0	0	1	0	0	1	1	0	0
15.	Involvement	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	0
16.	Attitude towards site	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	1

5.4 Formation of Diagraph

On the basis of iterations level shown in Table 9, the diagraph of all 16 components affecting customer experience in online environment is formed. The directional connectivity among all 16 components is shown as per the final reachability matrix depicted in Table 6. After removing the indirect links among the components, the final hierarchical diagraph is shown in Figure 3.

6. MICMAC ANALYSIS

The analytical method introduced by Duperrin and Godet (1973) was Matrice d' Impacts croises-multiplication appliqué a classment (cross-impact matrix multiplication applied to classification) is applied on the components of ISM model. According to Sharma et al., (1995), MICMAC analysis dealt with the multiplication properties of the matrices.

The aim to use this analytical method is to critically inspect the scope of each variable of the study. MICMAC analysis basically analyzes the driving and dependence powers of each variable shown in Table 5. In this analysis, all components are categorized into four groups. Group 1 describes autonomous components having weak driving and dependence powers due to which they relatively disconnected from the entire system because they possess only few week links with other components. Group 2 describes dependent components possessing weak driving power and strong dependence power. Group 3 describes linkage components having both strong, driving and dependence power, but these components are unstable in nature it is because if any change occurs to these components

Table 7. Final Reachability Matrix

Sr. No.	Components	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	DRIVING POWER
1.	Clear Goals	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	3
2.	Skill	1	1	1	1	1	1	0	0	0	1[a]	0	0	1	0	0	0	8
3.	Control	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	6
4.	Telepresence	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	3
5.	Ease of use	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	4
6.	Focused Attention	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	6
7.	Interactivity	1	1[a]	1	1	1	1	1	0	0	1	0	0	1	0	0	0	9
8.	Innovativeness	1	0	1[a]	1	1	1	1	1	0	1	0	0	1	0	0	0	9
9.	Challenge	1	1	1	1	0	1	0	1[a]	1	1	0	0	1	0	0	0	9
10.	Cognitive Spontaneity	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	4
11.	Contents	1	1	1	1	1	1	1	0	0	1	1	0	1	0	0	0	10
12.	Playfulness	1	0	0	1	1	1	1	0	0	1	0	1	1	0	0	0	8
13.	Customer Experience (Flow)	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
14.	Vividness	1	0	1	1	1	1	0	0	0	1	0	0	1	1	0	0	8
15.	Involvement	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	0	12
16.	Attitude towards site	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	1	8
	DEPENDENCE POWER	13	5	10	15	12	11	6	2	2	9	2	1	16	2	1	1	

Note: 1[a]- Transitivity

the other components will be affected by it. Group 4 portrays independent components possessing strong driving and weak dependence power. The driving and dependence powers of each component are depicted in Figure 4.

7. DISCUSSION

Today, customers are becoming more internet-savvy and they prefer online environment more in comparison to offline environment. With the changing scenario, the organizations are working a lot in order to enhance the experiences of their customers, but it is not an easy task in case of online settings. Its main reason is that in online environment the customer may be from any country and may belong to any culture. So, present study aimed to prioritize the components of online environment to assess customer experience by using interpretive structural modeling (ISM). With the help of Pareto analysis, 15 components have been identified and after adding an outcome component i.e. Customer Experience (Flow) a model is developed with total 16 components in order to analyze and prioritize the effectiveness of these components. The model shown in the present study highlights the interrelationship among the components which affects the customer experience in online environment. The driving-dependence power diagram has highlighted many important insights about these components.

A model of 16 components that help in building and enhancing customer experience in online environment depicted in Figure 3 has been formed by several deliberations. Initially with the help

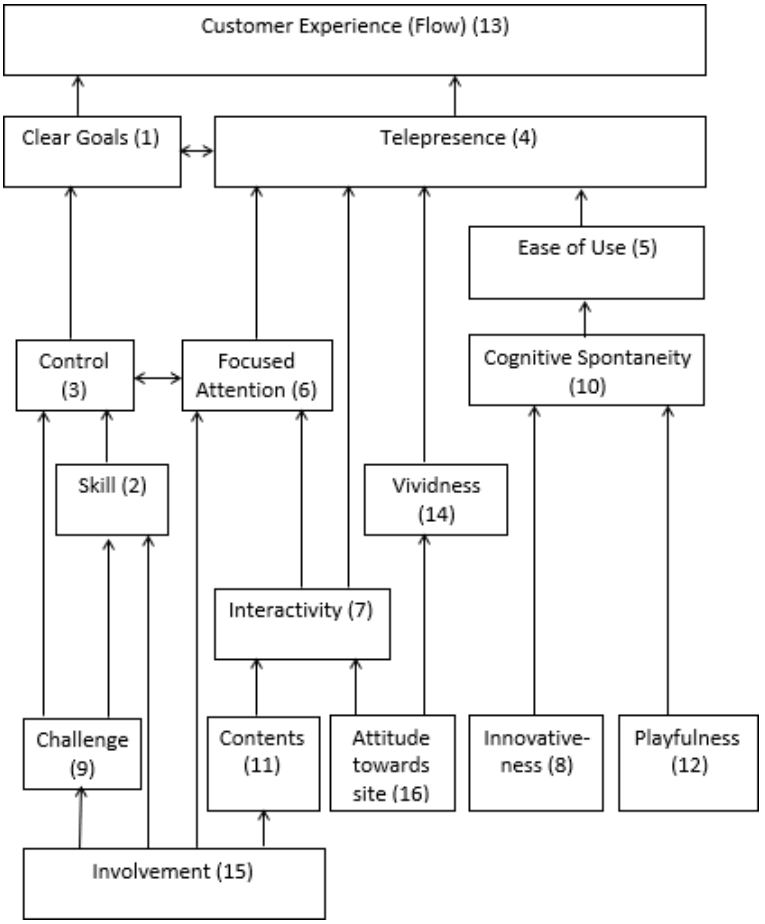
Table 8. Level Iteration I

Components	Reachability set	Antecedent set	Intersection set	Level
1	1,4,13	1,2,3,4,5,6,7,8,9,11,12,14,15	1,4	
2	1,2,3,4,5,6,10,13	2,7,9,11,15	2	
3	1,3,4,5,6,13	2,3,6,7,8,9,11,14,15,16	3,6	
4	1,4,13	1,2,3,4,5,6,7,8,9,10,11,12,14,15,16	1,4	
5	1,4,5,13	2,3,5,6,7,8,10,11,12,14,15,16	5	
6	1,3,4,5,6,13	2,3,6,7,8,9,11,12,14,15,16	3,6	
7	1,2,3,4,5,6,7,10,13	7,8,11,12,15,16	7	
8	1,3,4,5,6,7,8,10,13	8,9	8	
9	1,2,3,4,6,8,9,10,13	9,15	9	
10	4,5,10,13	2,7,8,9,10,11,12,14,15	10	
11	1,2,3,4,5,6,7,10,11,13	11,15	11	
12	1,4,5,6,710,12,13	12	12	
13	13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16	13	I
14	1,3,4,5,6,10,13,14	14,16	14	
15	1,2,3,4,5,6,7,9,10,11,13,15	15	15	
16	3,4,5,6,7,13,14,16	16	16	

Table 9. Level iteration II-IX

Iteration	Component	Reachability Set	Antecedent set	Intersection Set	Level
2nd	1	1,4	1,2,3,4,5,6,7,8,9,11,12,14,15	1,4	II
2nd	4	1,4	1,2,3,4,5,6,7,8,9,10,11,12,14,15,16	1,4,	II
3rd	5	5	2,3,5,6,7,8,10,11,12,14,15,16	5	III
4th	3	3,6	2,3,6,7,8,9,11,14,15,16	3,6	IV
4th	6	3,6	2,3,6,7,8,9,11,12,14,15,16	3,6	IV
4th	10	10	2,7,8,9,10,11,12,14,15	10	IV
5th	2	2,9	2,7,9,11,15	2,9	V
5th	14	14	14,16	14	V
6th	7	7	7,8,11,12,15,16	7	VI
7th	8	8	8,9	8	VII
7th	11	11,15	11,15	11,15	VII
7th	12	12	12	12	VII
7th	16	16	16	16	VII
8th	9	9	9,15	9	VIII
9th	15	15	15	15	IX

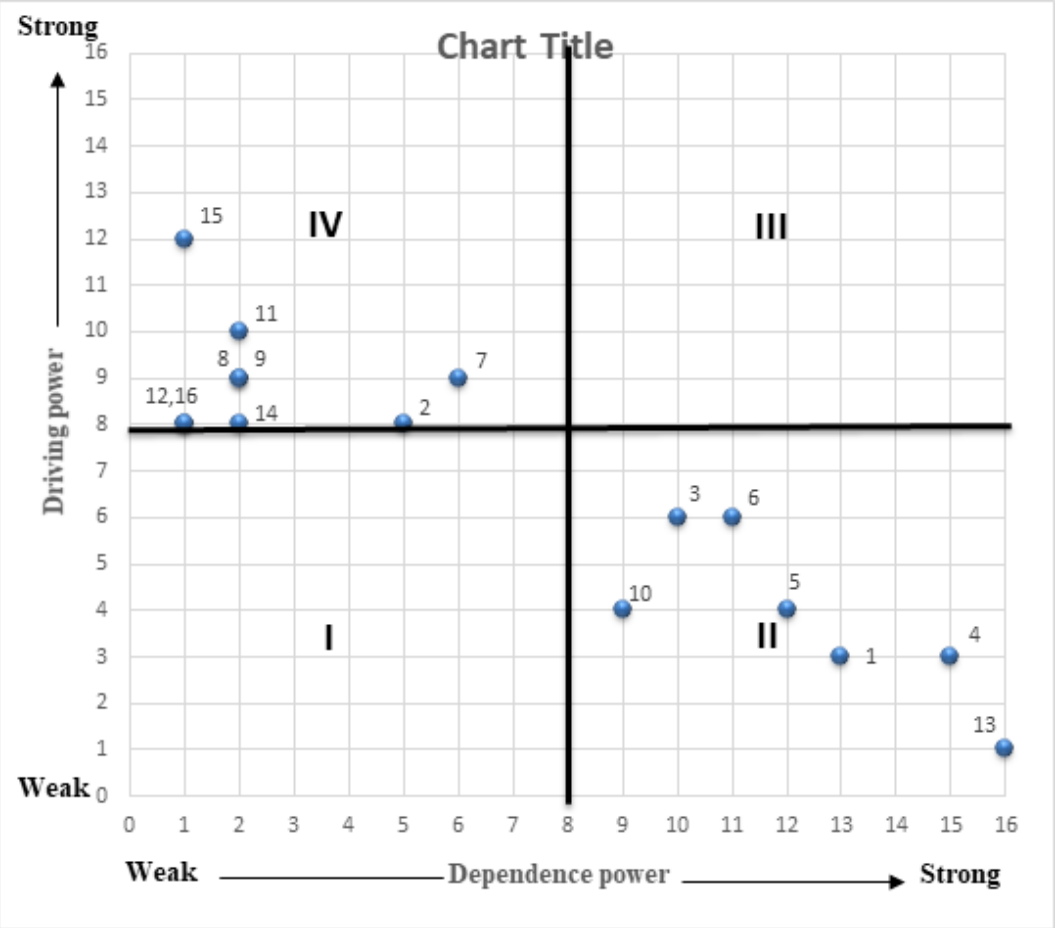
Figure 3. Diagraph of ISM



of expert's panel structural self-interaction matrix (SSIM) was designed. After that, through binary notations the SSIM was converted into initial reachability matrix and further after the incorporation of transitivity the initial reachability matrix was converted into final reachability matrix. Now to classify all the components into different levels, level partitioning is done and after conducting 9 iterations all the 16 components were partitioned into different levels. Finally, on the basis of the identified levels all the components are placed into a hierarchical structure. As level 1 was assigned to component 13, so it is placed at the topmost position in the hierarchy, next level 2 was assigned to two components i.e. component 1 and component 4, so both these components are placed below the component 13 but at parallel position and in the similar manner all the components are placed accordingly and a diagraph is formed shown in Figure 3.

In Figure 4, the results of MICMAC analysis are displayed. As none of the component lies in Group1 which indicates that all components are connected with the entire system and so all of them are very important for the organizations. Therefore, a proper care of all the components should be taken by the managers of the organizations. The components such as control, challenge, arousal, telepresence, flow, positive affect and exploratory behavior lies in Group 2 which depicts that these are the dependent components. These components possess weak driving power and strong dependence power. So, these components are placed in the top area of the ISM model. The organizations have to handle these components with very special care as they focus on the desired output and play a

Figure 4. Driving Power and Dependence Power Diagram (I- Autonomous Components, II- Dependent Components, III- Linkage Components, IV-Independent Components)



significant role in making desired output in favor of the organizations. None of the component lies in Group 3 which shows that all the components are stable and managers cannot leave any of the components while assessing customer experience. The components such as time distortion, skill, focused attention, interactivity, playfulness, start web and involvement are the independent components with weak dependence powers but with strong driving powers. This highlights that these are the 'key components' of this study which plays a major role in assessing customer experience in online environment. If the proper deployment of these components will be done by the organizations as a result an enhanced level of customer experience will definitely be achieved.

The components with higher driving powers are more strategic oriented whereas the components possessing higher dependence power are more performance oriented. In Figure 4, the topmost component i.e. flow have weakest driving power which implies that it depends upon all the bottom level components possessing higher driving powers. The mid-level components (control, skill, ease of use, focused attention, vividness, cognitive spontaneity and interactivity) can only be improved when the bottom-level components (involvement, challenge, contents, attitude towards site, innovativeness and playfulness) will be improved. This improvement in mid-level components will ultimately improve the top-level components. Further, the component flow explains the online experiences of the customers which is associated with varied consequences like satisfaction, loyalty, revisiting and repurchase

intention of the customer (Agarwal and Karahanna, 2000; Chen, 2006; Hausman and Siekpe, 2009; Huang, 2003). So, the proper identification and successful assessment of flow experiences in online environment helps the organization to improve their performance this in turn supports the organization to lead among its competitors and improve profitability of the organizations.

8. CONCLUDING REMARKS AND IMPLICATIONS OF THE STUDY

According to the insights provided in this article, the organizations can develop certain action plans by choosing and handling the different combinations of the driving components. From the academic point of view, this is the first study that constitutes the varied components of flow experience to assess the experiences of the customers in online settings which in turn contribute to enhance the customer satisfaction and overall profitability of the organizations. This study will also help the academicians to understand the directional relationship among the various components to properly manage flow experiences.

From managers' point of view, this study will play an important role in assessing and enhancing the customer experiences in online environment. The major implications evolving from this research are, firstly; none of the components lies under the autonomous component category which indicates that all the 16 components are important to assess the experiences of the online customers and the organizations have to handle all these components wisely and carefully. Secondly, the diagraph which highlights the interrelationships among the components helps the managers to deliver the optimum level of online experiences to their customers even if the organizations are facing the problems of time and resource crunch. Thirdly, in all the three level of components (bottom level, mid-level and top-level) it is clearly depicted that which component is directly or indirectly affecting which other component. So, it is not required for the organizations to plan and focus on all 16 components rather by proper planning of only the bottom level components will provide the optimal flow experience which in turn enhances the customer satisfaction and profitability of the organization in an effective manner. Lastly, this study will be also helpful for the organizations in case of planning of proper fund allotment in the right direction with minimum efforts and time.

9. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Like any other research, this study also has few limitations which may direct future researchers to explore this topic further. First, the components of online consumer experience identified and prioritized through Pareto analysis and expert's opinion, therefore, it may be possible that some of the new and vital components might be left out of study. So, future study may employ other methods like, expert opinion, in-depth interviews, etc. in order to identify the vital few components of online consumer experience. Second, results of ISM are based on opinions of few experts and there is also a possibility of judgement bias. Thus, the results of ISM are not statistical significant and there may also be issues with generalizability of the study. To address this issue, future studies may employ structure equation modeling technique. Future studies may also explore the impact of components of online experience in different industries and countries.

Conflicts of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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