Journal of Policy Research, 9(2), 87-102.
https://jprpk.com
https://doi.org/10.5281/zenodo.7959055

An Analysis of the Determinants of Trust in Virtual Buying: An Interpretive Structural Modeling Approach

Tehmina Fiaz Qazi[1], Abdul Aziz Khan Niazi[2], Aqsa Mahmood[3], Abdul Basit[4], Ifra Aziz Khan Niazi[5]

Abstract

The aim of the study is to determine what determinants influence trust in online purchases as well as how those determinants relate to one another in different contexts. The general design of this qualitative study includes a literature review, primary data gathering strategies, and qualitative analytic approaches. Relying on the purposive sample method, data are gathered through one-on-one interviews with a panel of experts utilizing a matrix-style questionnaire. Interpretive Structural Modeling (ISM) and Cross impact matrix multiplication applied to classification (MICMAC) have been the two main methods employed. As a result of its position at the bottom of the ISM model and in the independent quadrant of the MICMAC model, the determinant "return policies" is shown to be crucial, whereas the determinants "natural propensity to trust," "attitude toward online shopping," and "online impulse buying" are the least significant because they are at the top of the ISM. This study offers new important information about the determinants of trust in virtual buying. It offers a useful structural model and categorization of significant determinants. The study has certain unique data, methodological, and resource-related constraints. It is the qualitative methodology reveals relationships between determinants but does not quantify connections. The study is a conventional academic researcher effort with constrained physical/financial resources; as a result, the findings of the study outcomes is constrained.

Keywords: Trust, virtual buying, ISM, MICMAC, Pakistan

1. Introduction

Trust is the most important factor in electronic commerce. E-transactions must move smoothly and perceived dangers must be minimized, which requires building buyer trust in an online vendor. The rate of e-commerce adoption is significantly influenced by this trust (Wang et al., 2015). One of the essential components in raising purchase intentions is customer trust. The trust that customers have in the seller is a key component in e-commerce because they make purchases before physically inspecting and using the product. Trust is crucial in a transaction with a high perceived product risk and significant ambiguity, such as an online purchase (Gefen et al., 2003; Wang et al., 2015). The benefits of online shopping have arguably never been clearer than they are now, especially in light of the COVID-19 outbreak. Government lockdowns that restrict movement and accessibility to the market, changing consumer attitudes about the potential safety and health risks of doing business with brick-and-mortar establishments, and online trading have all made it vital for many merchants to have an electronic source of revenue. Additionally, this tendency may increase consumers' interest in online shopping (Donthu and Gustafsson, 2020; Audi and Ali, 2023). One of the factors slowing down the rise of online shopping is the risk involved in making purchases. A few examples of shopping risk include possible financial risk brought on by fraud (such as when retailers fail to supply an item after receiving payment or provide false information about the goods), as well as security and privacy risks (Zhuang et al., 2018; Shahbaz et al., 2019). Although a large number of studies is present in internet shopping but we were unable to locate any studies that looked at the factors that influence trust in online purchases. A comparatively under-researched topic is the composition of trust determinants. Although consumers are increasingly aware of virtual purchases, they still lack faith in them. Most customers use the ROBO (Research Online, Buy Offline) method. Pakistani consumers are not yet prepared to accept technology. People frequently choose the items they want online but don't actually order them. To purchase these items, they visit real stores (Anantharaman et al., 2022). This study tries to assess the determinants that influence trust when making digital purchases. The precise objectives of our study are (i) to determine the determinants that influence virtual purchasing, organize the determinants according to hierarchy, importance, and structure. (ii) to categorize the determinants according to their dependence and driving. (iii) to pinpoint the important determinant. (iv) to talk about the outcome as fact. The best methods for this study are interpretive structural modelling (ISM) and Matrices' Impacts Cruise's Multiplication Appliquée a UN Classement (MICMAC). ISM is used to examine these complicated relationships and display them in detailed graphical representations. It has the ability to translate mental models into binary and later graphical ones. ISM with MICMAC is frequently used in a variety of studies since it is straightforward and performs better than statistics and other mathematical methods. Using scale-/data-centric methodologies, MICMAC evaluates the ISM results and produces a classification diagram based on their driving dependence.

[1] Hailey College of Banking & Finance, University of the Punjab, Lahore, Pakistan
[2] Department of Management Sciences, University of Engineering and Technology, Lahore, Pakistan
[3] Institute of Business and Management, University of Engineering and Technology, Lahore, Pakistan
[4] Lahore Institute of Science & Technology, Lahore, Pakistan
[5] Faculty of Management Studies, UCP Business School, University of Central Punjab, Lahore, Pakistan

The remaining four sections of the article are: Literature review; Methodology; Analysis, results and discussion; and conclusion.

2. Literature Review

We carefully analyzed the literature to determine the gap and the scope of the work that has been done in order to have a better understanding. The HEC digital library offers access to numerous databases for earlier work. We look at various search databases like JStor, Elsevier (Science Direct), Emerald, Taylor & Francis, and Springer Link that are utilized to gather secondary data for study. A review of the literature is adequate to choose this subject and close the gap. Virtual shopping, virtual buying, developing trust, 3D technology, virtual reality, virtual stores, research online buy offline, customers' trust, lack of trust, and customers are some of the key terms utilized to find literature. The years 2000 through 2022 are covered in the literature review. 300–400 papers are evaluated. Due to the e-commerce and online buying industries' rapid growth, consumers are increasingly becoming knowledgeable of and using online shopping. As a result, more and more producers are considering using the internet to market their products. Online sales were worth $2.29 trillion globally in 2017 and will be worth $4.48 trillion by 2021 (Pu et al., 2021). Based on the 42nd China Internet Development Statistics Report for the period of January to May 2018 issued by the China Internet Network Information Center, the revenues from Chinese e-commerce platforms have increased by 39.1% compared to the corresponding time previous year (State Internet Information Office, 2018). Despite the growing popularity of online buying, the "touch and feel" element, particularly in underdeveloped countries like Pakistan, remains to be one of the biggest challenges for online vendors. This study is crucial because it provides e-retailers with essential information about the most important items to focus on in order to efficiently and economically stimulate online purchasing, especially e-retailers in developing countries. It shows that developed and developing nations still have extremely different levels of e-commerce growth. According to study, trust is the most important factor in electronic trade (Wang et al., 2015). Buyers' trust in these technologies has a direct impact on how well they fulfil their needs. More importantly, it is discovered that buyers' perceptions of the various types of technologies are affected separately by customers' perceptions of technology fit and technology trust (Wang et al., 2021). A list of the determinants of trust in virtual buying was initially compiled based on the literature research, and it was submitted to a group of experts to get their input. The experts were given the choice to add, combine, and/or delete the result from/within the list after they had been asked to evaluate its usefulness, adequacy, and adequacy. This method led to the creation of a list of twenty-one determinants that were relevant to the research topic. (Table 1).

Table 1: List of determinants of trust in virtual buying

Code	Determinants	Approval Votes
1	Natural propensity to trust (Leonard & Jones, 2021)	14
2	Perceived product risk (Hsu, Chuang & Hsu, 2014)	16
3	Experience/knowledge of online shopping scams (Xiao et al., 2016)	15
4	Information quality (Jeong & Lambert, 2001)	10
5	Website quality (Everard & Galletta, 2006)	14
6	Brand reputation (Xiao et al., 2016)	15
7	Level of customer services (Jain et al., 2022)	15
8	Word of mouth/ reference group (Ding et al, 2020)	12
9	Security & privacy of information (Cossar & Varga, 2017)	12
10	Attitude towards online shopping (Pena-Garcia et al., 2020)	12
11	Online impulse buying (Gulfraz et al., 2022)	13
12	Level of facilitation during online shopping (Farida, 2016)	13
13	Intention to purchase (Kim et al., 2008)	13
14	Digital influencers' influence (Shamim & Islam, 2022)	12
15	Variety of product available in online shopping (Chang, 2011)	15
16	Return policies (Tandon et al., 2021)	16
17	Order accuracy (Jain et al., 2022)	14
18	Order timelines (Jain et al., 2022)	14
19	Medium/mode of payment (Tandon et al., 2021)	14
20	Pricing policies (Suhud et al., 2022)	14
21	Product delivery channel (Vafaei et al., 2020)	15

3. Methodology

Interpretivism is chosen as the research philosophy in this study, which employs an inductive methodology. This study will assess the factors that influence trust in online purchases using a qualitative approach followed by an inductive methodology and is based on primary data. The overall research design comprises a thorough examination of the literature, as well as questionnaire data collection, analysis, and structural modelling. The discourse of a thorough literature review is used in the study to identify the outcomes, ISM is used to create a structural model, and MICMAC

is used to analyze, classify, and confirm the findings of ISM (Ahmad et al., 2019; Sushil, 2017). The population for this study includes internet vendors, online buyers, technology experts, environmentalists, regulators, scholars, the international community, marketers, the general public, and other stakeholders. Respondents are selected using a specified set of criteria depending on the goals of the study and according to the purposive sampling approach (Clayton, 1997). Non-probability purposive sampling is used to select the sample. The panel is heterogeneous, including twenty-nine academic and industrial specialists on it. The data is gathered utilizing a matrix-style VAXO-based questionnaire (Shaukat et al., 2021; Niazi et al., 2019; Cai & Xia, 2018). In order to establish the 'leads to' relationship among the elements, respondents were individually instructed and directed in person with the following guidelines: Fill in only the white cells; skip the black and grey ones; enter V when the row leads to the column; A when the column leads to the row; O if there is no relation between the row and the column; and enter X when the row and the column are leading to each other (Abbass et al., 2022). Data gathered from experts were processed using the standard ISM and MICMAC procedures. Since, it is exploratory type of study within objective to generate the list of elements of phenomena and unearth the relationships and hierarchies among them. Therefore, the methodologies have been considered accordingly. We consider grounded theory, grey systems theory, interpretive structural modeling, structural equational modeling, principal component analysis etc. and we found ISM the most appropriate for achieving the objectives of the study. However, it also seems to be appropriate to use MICMAC analysis for corroborating the results of ISM.

3.1. Panel of Experts

The ISM strategy recommends using a range of data collection techniques, such as a discussion session, the Delphi method, a brainstorming session, a matrix-style questionnaire, an in-depth discussion, the nominal group technique, and others, to obtain an expert's perspective. People must be knowledgeable about the subject topic and have at least 10 years of relevant experience in addition to theoretical knowledge (Attri et al., 2013; Ali et al., 2022). This study employs a varied panel of experts and a non-random sampling approach. The diverse panel includes twenty-nine specialists. Strong theoretical understanding was a prerequisite for choosing the experts in this investigation. Pre-arranged meetings with the specialists were scheduled at their offices. After roughly four to five sessions of initial discussion, the bulk of the experts answered to the poll, therefore the process of gathering data took around two months. It offers the researcher and respondent the chance to discuss the research study in-depth and engage in thought-provoking dialogue. Seven online business owners, four IT professionals, two environmentalists, four academics/researchers, three regulators, one international community, three members of the general public, three online users, and two digital marketers make up the panel of experts. On the (n (n-1))/2 matrix, each expert separately contributed data on the paired relations of the factors (*i, j* part of the questionnaire). *VAXO* symbols are employed for data extraction. The directions for filling out the questionnaire were included with the questionnaire. Using mode, the responses for each element were added up.

Table 2: Structural Self-Interaction Matrix (SSIM)

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1		V	A	A	A	A	A	A	A	V	A	A	V	A	O	A	A	A	A	A	A
2			A	A	A	A	A	A	A	V	V	A	V	A	A	A	A	A	O	A	A
3				O	A	A	A	A	V	V	V	A	V	A	O	A	A	O	O	O	O
4					X	V	A	V	X	V	V	V	V	A	V	A	V	A	V	V	A
5						V	V	V	V	V	V	V	V	O	X	O	O	V	V	V	O
6							A	A	A	V	V	A	V	X	A	A	A	A	A	A	A
7								V	A	V	V	X	V	O	O	A	A	A	A	A	A
8									A	V	V	A	V	A	A	A	A	A	A	A	A
9										V	V	V	V	O	O	O	O	O	V	O	V
10											V	A	A	A	A	A	A	A	A	A	A
11												A	A	A	A	A	A	A	A	A	A
12													V	O	A	A	A	A	X	A	X
13														A	A	A	A	A	A	A	A
14															O	O	O	O	O	O	O
15																O	O	O	O	O	O
16																	O	O	O	A	O
17																		X	O	O	A
18																			O	O	X
19																				X	O
20																					X

4. Analysis, Results and Discussion

4.1. Analysis

The traditional ISM approach created by Warfield (1973) is used for structural modelling. The structural self-interaction matrix (SSIM) aggregates the export data (Table 2).

To convert SSIM into a binary matrix, the conventional rules created by Warfield (1973) are used (Table 3).

Table 3: Initial Reachability Matrix

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
3	1	1	1	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0
4	1	1	0	1	1	1	0	1	1	1	1	1	1	0	1	0	1	0	1	1	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0
6	1	1	1	0	0	1	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0
7	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0
8	1	1	1	0	0	1	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0
9	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	1	0	1
10	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
11	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
12	1	1	1	0	0	1	1	1	0	1	1	1	1	0	0	0	0	0	1	0	1
13	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
14	1	1	1	1	0	1	0	1	0	1	1	0	1	1	0	0	0	0	0	0	0
15	0	1	0	0	1	1	0	1	0	1	1	1	1	0	1	0	0	0	0	0	0
16	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	0	0	0	0	0
17	1	1	1	0	0	1	1	1	0	1	1	1	1	0	0	0	1	1	0	0	0
18	1	1	0	1	0	1	1	1	0	1	1	1	1	0	0	0	1	1	0	0	1
19	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	0	0	1	1	0
20	1	1	0	0	0	1	1	1	0	1	1	1	1	0	0	1	0	0	1	1	1
21	1	1	0	1	0	1	1	1	0	1	1	1	1	0	0	0	1	1	0	1	1

MS Excel is used to systematically test the transitivity of each 0 in the initial reachability matrix. A transitive binary matrix is created by incorporating transitive relations into the reachability matrix (Table 4).

Table 4: Final Reachability Matrix

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	1	1	0	0	0	0	0	0	0	1	1*	0	1	0	0	0	0	0	0	0	0
2	1*	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
3	1	1	1	1*	0	1*	1*	1*	1	1	1	1*	1	0	0	0	0	0	1*	0	1*
4	1	1	1*	1	1	1	1*	1	1	1	1	1	1	1*	1	1*	1	1*	1	1	1*
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1*	1	1*	1*	1	1	1	1*
6	1	1	1	1*	0	1	0	1*	1*	1	1	0	1	1	0	0	0	0	0	0	0
7	1	1	1	1	1*	1	1	1	1*	1	1	1	1	1*	1*	0	1*	0	1*	1*	1*
8	1	1	1	0	0	1	0	1	1*	1	1	0	1	1*	0	0	0	0	0	0	0
9	1	1	1*	1	1*	1	1	1	1	1	1	1	1	1*	1*	0	1*	1*	1	1*	1
10	1*	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
11	1	1*	0	0	0	0	0	0	0	1*	1	0	1*	0	0	0	0	0	0	0	0
12	1	1	1	1*	0	1	1	1	1*	1	1	1	1	1*	0	0	1*	1*	1	1*	1
13	1*	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
14	1	1	1	1	1*	1	0	1	1*	1	1	1*	1	1	1*	0	1*	0	1*	1*	0
15	1*	1	1*	1*	1	1	1*	1	1*	1	1	1	1	1*	1	0	0	1*	1*	1*	1*
16	1	1	1	1	1*	1	1	1	1*	1	1	1	1	1*	1*	1	1*	0	1*	1*	1*
17	1	1	1	1*	0	1	1	1	1*	1	1	1	1	1*	0	0	1	1	1*	0	1*
18	1	1	1*	1	1*	1	1	1	1*	1	1	1	1	1*	1*	0	1	1	1*	1*	1
19	1	1*	1*	1*	0	1	1	1	0	1	1	1	1	1*	0	1*	0	0	1	1	1*
20	1	1	1*	1*	0	1	1	1	0	1	1	1	1	1*	0	1	1*	1*	1	1	1
21	1	1	1*	1	1*	1	1	1	1*	1	1	1	1	1*	1*	1*	1	1	1*	1	1

The transitive relations can be identified by the symbol 1*. The final transitive matrix (Table 4) is divided using the iteration approach (Warfield 1973, 1974), which produced nine iterations (Tables 5, 6, 7, 8, 9, 10, 11, 12 and 13) (Sushil, 2018).

Table 5: Level Partition – Iteration 1

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
1	1,2,10,11,13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,2,10,11,13	I
2	1,2,10,11,13	1,2,3,4,5,6,7,8,9,11,12,14,15,16,17,18,19,20,21	1,2,11	
3	1,2,3,4,6,7,8,9,10,11,12,13,19,21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,7,8,9,12,19,21	
4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	
5	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	
6	1,2,3,4,6,8,9,10,11,13,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,8,9,14	
7	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,17,19,20,21	
8	1,2,3,6,8,9,10,11,13,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,6,8,9,14	
9	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21	3,4,5,6,7,8,9,12,14,15,16,17,18,21	3,4,5,6,7,8,9,12,14,15,17,18,21	
10	1,10,11	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,10,11	I
11	1,2,10,11,13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,2,10,11,13	I
12	1,2,3,4,6,7,8,9,10,11,12,13,14,17,18,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,9,12,14,17,18,19,20,21	
13	1,10,11,13	1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19,20,21	1,11,13	
14	1,2,3,4,5,6,8,9,10,11,12,13,14,15,17,19,20	4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,6,8,9,12,14,15,17,19,20	
15	1,2,3,4,5, 6,7,8,9,10,11,12,13,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	
16	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	
17	1,2,3,4,6,7,8,9,10,11,12,13,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	
18	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	
19	1,2,3,4,6,7,8,10,11,12,13,14,16,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,12,14,16,19,20,21	
20	1,2,3,4,6,7,8,10,11,12,13,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	
21	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	

Table 6: Level Partition – Iteration 2

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
2	2,13	2,3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	2	
3	2,3,4,6,7,8,9,12,13,19,21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,7,8,9,12,19,21	
4	2,3,4,5,6,7,8,9,12,13,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	
5	2,3,4,5,6,7,8,9,12,13,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	
6	2,3,4,6,8,9,13,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,8,9,14	
7	2,3,4,5,6,7,8,9,12,13,14,15,17,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,17,19,20,21	
8	2,3,6,8,9,13,14	3,4,5,6,7,8,9,12,14, 15,16,17,18,19,20,21	3,6,8,9,14	
9	2,3,4,5,6,7,8,9,12,13,14,15,17,18,19,20,21	3,4,5,6,7,8,9,12,14, 15,16,17,18,21	3,4,5,6,7,8,9,12,14,15,17,18,21	
12	2,3,4,6,7,8,9,12,13,14,17,18,19,20,21,	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,9,12,14,17,18,19,20,21	
13	13	2,3,4,5,6,7,8,9,12,13,14,15,16,17,18,19,20,21	13	II
14	2,3,4,5,6,8,9,12,13,14,15,17,19,20	4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,6,8,9,12,14,15,17,19,20	
15	2,3,4,5, 6,7,8,9,12,13,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	
16	2,3,4,5,6,7,8,9,12,13,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	
17	2,3,4,6,7,8,9,12,13,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	
18	2,3,4,5,6,7,8,9,12,13,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	
19	2,3,4,6,7,8,12,13,14,16,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,12,14,16,19,20,21	
20	2,3,4,6,7,8,12,13,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	
21	2,3,4,5,6,7,8,9,12,13,14,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	

Table 7: Level Partition – Iteration 3

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
2	2	2,3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	2	III
3	2,3,4,6,7,8,9,12,19,21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,7,8,9,12,19,21	
4	2,3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	
5	2,3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	
6	2,3,4,6,8,9,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,8,9,14	
7	2,3,4,5,6,7,8,9,12,14,15,17,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,17,19,20,21	
8	2,3,6,8,9,14	3,4,5,6,7,8,9,12,14, 15,16,17,18,19,20,21	3,6,8,9,14	
9	2,3,4,5,6,7,8,9,12,14,15,17,18,19,20,21	3,4,5,6,7,8,9,12,14, 15,16,17,18,21	3,4,5,6,7,8,9,12,14,15,17,18,21	
12	2,3,4,6,7,8,9,12,14,17,18,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,9,12,14,17,18,19,20,21	
14	2,3,4,5,6,8,9,12,14,15,17,19,20	4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,6,8,9,12,14,15,17,19,20	
15	2,3,4,5, 6,7,8,9,12,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	
16	2,3,4,5,6,7,8,9,12,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	
17	2,3,4,6,7,8,9,12,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	
18	2,3,4,5,6,7,8,9,12,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	
19	2,3,4,6,7,8,12,14,16,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,12,14,16,19,20,21	
20	2,3,4,6,7,8,12,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	
21	2,3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	

Table 8: Level Partition – Iteration 4

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
3	3,4,6,7,8,9,12,19,21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,7,8,9,12,19,21	IV
4	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	
5	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	
6	3,4,6,8,9,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,8,9,14	IV
7	3,4,5,6,7,8,9,12,14,15,17,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,17,19,20,21	
8	3,6,8,9,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,6,8,9,14	IV
9	3,4,5,6,7,8,9,12,14,15,17,18,19,20,21	3,4,5,6,7,8,9,12,14, 15,16,17,18,21	3,4,5,6,7,8,9,12,14,15,17,18,21	
12	3,4,6,7,8,9,12,14,17,18,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,9,12,14,17,18,19,20,21	
14	3,4,5,6,8,9,12,14,15,17,19,20	4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,6,8,9,12,14,15,17,19,20	
15	3,4,5, 6,7,8,9,12,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	
16	3,4,5,6,7,8,9,12,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	
17	3,4,6,7,8,9,12,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	
18	3,4,5,6,7,8,9,12,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	
19	3,4,6,7,8,12,14,16,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,12,14,16,19,20,21	
20	3,4,6,7,8,12,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	
21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	

Table 9: Level Partition – Iteration 5

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
4	4,5,7,9,12,14,15,16,17,18,19,20,21	4,5,7,9,12,14,15,16,17,18,19,20,21	4,5,7,9,12,14,15,16,17,18,19,20,21	V
5	4,5,7,9,12,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	
7	4,5,7,9,12,14,15,17,19,20,21	4,5,7,9,12,15,16,17,18,19,20,21	4,5,7,9,12,15,17,19,20,21	
9	4,5,7,9,12,14,15,17,18,19,20,21	4,5,7,9,12,14, 15,16,17,18,21	4,5,7,9,12,14,15,17,18,21	
12	4,7,9,12,14,17,18,19,20,21	4,5,7,9,12,14,15,16,17,18,19,20,21	4,7,9,12,14,17,18,19,20,21	V
14	4,5,9,12,14,15,17,19,20	4,5,7,9,12,14,15,16,17,18,19,20,21	4,5,9,12,14,15,17,19,20	V
15	4,5,7,9,12,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	
16	4,5,7,9,12,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	
17	4,7,9,12,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	
18	4,5,7,9,12,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	
19	4,7,12,14,16,19,20,21	4,5,7,9,12,14,15,16,17,18,19,20,21	4,7,12,14,16,19,20,21	V
20	4,7,12,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	
21	4,5,7,9,12,14,15,16,17,18,19,20,21	4,5,7,9,12,15,16,17,18,19,20,21	4,5,7,9,12,15,16,17,18,19,20,21	

Table 10: Level Partition – Iteration 6

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
5	5,7,9,15,16,17,18,20,21	5,7,9,15,16,18,21	5,7,9,15,16,18,21	
7	5,7,9,15,17,20,21	5,7,9,15,16,17,18,20,21	5,7,9,15,17,20,21	VI
9	5,7,9,15,17,18,20,21	5,7,9,15,16,17,18,21	5,7,9,15,17,18,21	
15	5,7,9,15,18,20,21	5,7,9,15,16,18,21	5,7,9,15,18,21	
16	5,7,9,15,16,17,20,21	5,16,19,20,21	5,16,20,21	
17	7,9,17,18,21	5,7,9,16,17,18,20,21	7,9,17,18,21	VI
18	5,7,9,15,17,18,20,21	5,9,15,17,18,20,21	5,9,15,17,18,20,21	
20	7,16,17,18,20,21	5,7,9,15,16,18,20,21	7,16,18,20,21	
21	5,7,9,15,16,17,18,20,21	5,7,9,15,16,17,18,20,21	5,7,9,15,16,17,18,20,21	VI

Table 11: Level Partition – Iteration 7

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
5	5,9,15,16,18,20	5,9,15,16,18	5,9,15,16,18	
9	5,9,15,18,20	5,9,15,16,18	5,9,15,18	
15	5,9,15,18,20	5,9,15,16,18	5,9,15,18	
16	5,9,15,16,20	5,16,19,20	5,16,20	
18	5,9,15,18,20	5,9,15,18,20	5,9,15,18,20	VII
20	16,18,20	5,9,15,16,18,20	16,18,20	VII

Table 12: Level Partition – Iteration 8

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
5	5,9,15,16	5,9,15,16	5,9,15,16	VIII
9	5,9,15	5,9,15,16	5,9,15	VIII
15	5,9,15	5,9,15,16	5,9,15	VIII
16	5,9,15,16	5,16,19	5,16	

Table 13: Level Partition – Iteration 9

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
16	16	16	16	IX

Table 14: Summary of level of iterations

Code	Reachability Set (row)	Antecedent Sets (column)	Intersection Set	Level
1	1,2,10,11,13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,2,10,11,13	1
2	1,2,10,11,13	1,2,3,4,5,6,7,8,9,11,12,14,15,16,17,18,19,20,21	1,2,11	3
3	1,2,3,4,6,7,8,9,10,11,12,13,19,21	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,7,8,9,12,19,21	4
4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	3,4,5,6,7,9,12,14,15,16,17,18,19,20,21	5
5	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,16,18,21	8
6	1,2,3,4,6,8,9,10,11,13,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,4,6,8,9,14	4
7	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,17,19,20,21	6
8	1,2,3,6,8,9,10,11,13,14	3,4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	3,6,8,9,14	4
9	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21	3,4,5,6,7,8,9,12,14,15,16,17,18,21	3,4,5,6,7,8,9,12,14,15,17,18,21	8
10	1,10,11	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,10,11	1
11	1,2,10,11,13	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	1,2,10,11,13	1
12	1,2,3,4,6,7,8,9,10,11,12,13,14,17,18,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,9,12,14,17,18,19,20,21	5
13	1,10,11,13	1,2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19,20,21	1,11,13	2
14	1,2,3,4,5,6,8,9,10,11,12,13,14,15,17,19,20	4,5,6,7,8,9,12,14,15,16,17,18,19,20,21	4,5,6,8,9,12,14,15,17,19,20	5
15	1,2,3,4,5, 6,7,8,9,10,11,12,13,14,15,18,19,20,21	4,5,7,9,14,15,16,18,21	4,5,7,9,14,15,18,21	8
16	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,19,20,21	4,5,16,19,20,21	4,5,16,19,20,21	9
17	1,2,3,4,6,7,8,9,10,11,12,13,14,17,18,19,21	4,5,7,9,12,14,16,17,18,20,21	4,7,9,12,14,17,18,21	6
18	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21	4,5,9,12,15,17,18,20,21	4,5,9,12,15,17,18,20,21	7
19	1,2,3,4,6,7,8,10,11,12,13,14,16,19,20,21	3,4,5,7,9,12,14,15,16,17,18,19,20,21	3,4,7,12,14,16,19,20,21	5
20	1,2,3,4,6,7,8,10,11,12,13,14,16,17,18,19,20,21	4,5,7,9,12,14,15,16,18,19,20,21	4,7,12,14,16,18,19,20,21	7
21	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	3,4,5,7,9,12,15,16,17,18,19,20,21	6

Conical matrix (Table 15) is created using the Warfield (1973) permutation approach.

Table 15: Conical Matrix

Code	1	10	11	13	2	3	6	8	4	12	14	19	7	17	21	18	20	5	9	15	16	Driving
1	1	1	1*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
10	1*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
11	1	1*	1	1*	1*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
13	1*	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
2	1*	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
3	1	1	1	1	1	1	1*	1*	1*	1*	0	1*	1*	0	1*	0	0	0	1	0	0	14
6	1	1	1	1	1	1	1	1*	1*	0	1	0	0	0	0	0	0	0	1*	0	0	11
8	1	1	1	1	1	1	1	1	0	0	1*	0	0	0	0	0	0	0	1*	0	0	10
4	1	1	1	1	1	1*	1	1	1	1	1*	1	1*	1	1*	1*	1	1	1	1	1*	21
12	1	1	1	1	1	1	1	1	1*	1	1*	1	1	1*	1	1*	1*	0	1*	0	0	18
14	1	1	1	1	1	1	1	1	1	1*	1	1*	0	1*	0	0	1*	1*	1*	1*	0	17
19	1	1	1	1	1*	1*	1	1	1*	1	1*	1	1	0	1*	0	1	0	0	0	1*	16
7	1	1	1	1	1	1	1	1	1	1	1*	1*	1	1*	1*	0	1*	1*	1*	1*	0	19
17	1	1	1	1	1	1	1	1	1*	1	1*	1*	1	1	1*	1	0	0	1*	0	0	17
21	1	1	1	1	1	1*	1	1	1	1	1*	1*	1	1	1	1	1	1*	1*	1*	1*	21
18	1	1	1	1	1	1*	1	1	1	1	1*	1*	1	1	1	1	1*	1*	1*	1*	0	20
20	1	1	1	1	1	1*	1	1	1*	1	1*	1	1	1*	1	1*	1	0	0	0	1	18
5	1	1	1	1	1	1	1	1	1	1	1*	1	1	1*	1*	1	1	1	1	1	1*	21
9	1	1	1	1	1	1*	1	1	1	1	1*	1	1	1*	1	1*	1*	1*	1	1*	0	20
15	1*	1	1	1	1	1*	1	1	1*	1	1*	1*	1*	0	1*	1*	1*	1	1*	1	0	19
16	1	1	1	1	1	1	1	1	1	1	1*	1*	1	1*	1*	0	1*	1*	1*	1*	1	20
Dependence	21	21	21	20	19	16	16	16	15	14	15	14	13	11	13	9	12	9	14	9	6	304

The extraction of the ISM model is indicated by the grey pixels on diagonals. The construction of an ISM model, or directed graph (Fig. 1), makes use of level partitioning attained through iterations.

The ISM model shows that the determinants coded as 1, 10 and 11 occupy level I. Accordingly, 13 occupy level II; 2 occupy level III; 3, 6 and 8 occupy level IV; 4, 12, 14 and 19 occupy level V; 7, 17 and 21 occupy level VI; 18 and 20 occupy level VII; 5, 9 and 15 occupy level VIII and 16 occupy level IX.

4.2. MICMAC analysis

The final reachability matrix (Table 4) is utilized to create a driving-dependence diagram (Fig. 2) using a scale-centric methodology and the MICMAC algorithm devised by Godet (1986).

The MICMAC findings, as shown in Fig. 2, indicate that the determinants coded as 5,15,16,17 and 18 are classified as independent. There are no determinants classified as autonomous. The determinants coded as 3,4,7,9,12,14,19,20 and 21 are classified as linkage. The determinants coded as 1,2,10,11 and 13 are classified as dependent.

Table 16 shows the overall results of the study, results of literature review, results of ISM and results of MICMAC analysis.

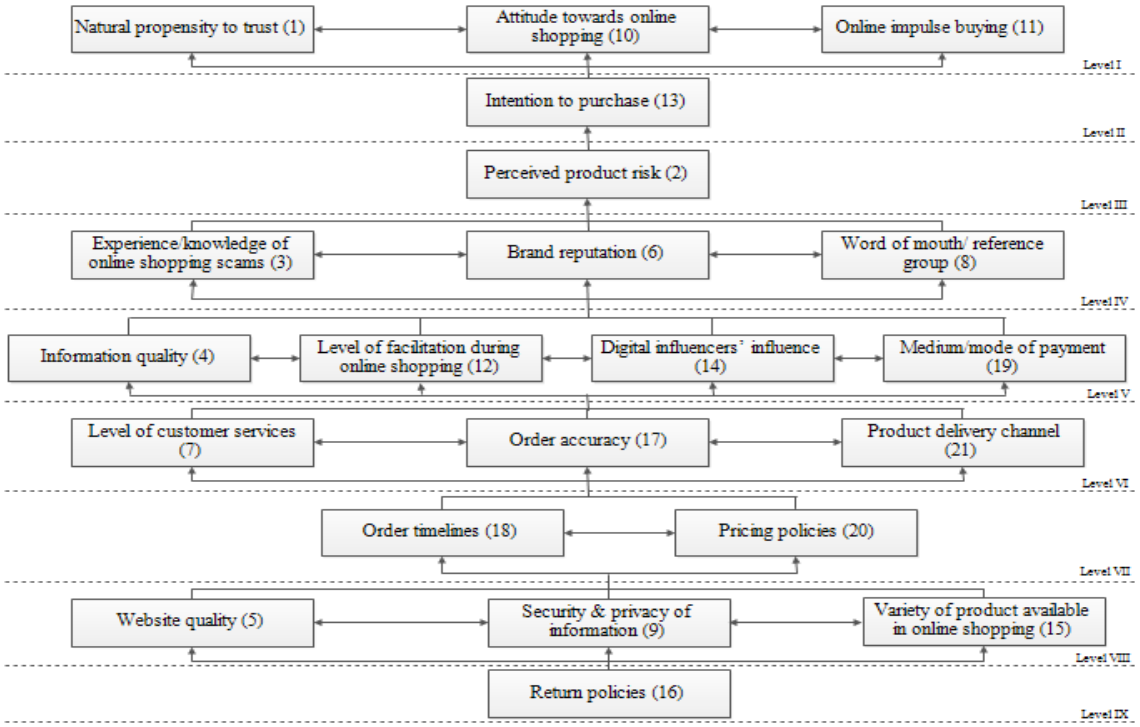

Figure 1: ISM Model

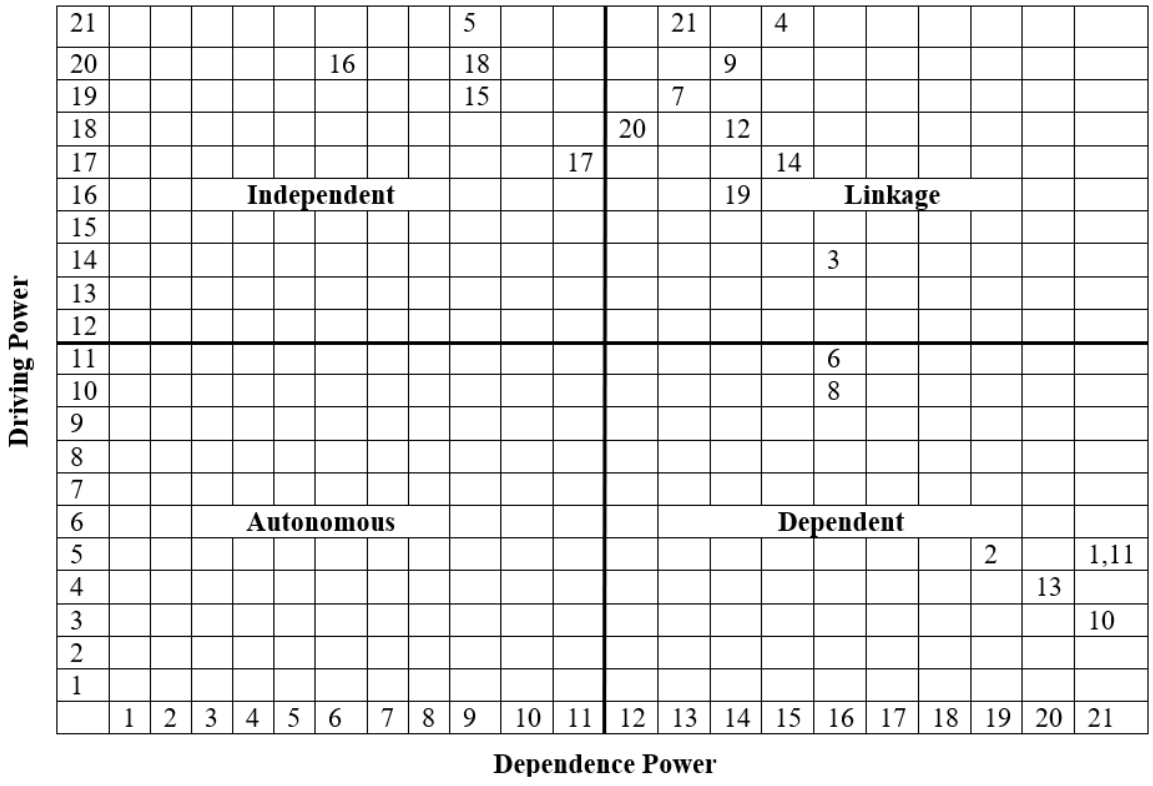

Figure 2: Driving Dependence Diagram

Table 16: Juxtaposed results of literature, MICMAC, and ISM

Results of literature Review		Results of MICMAC Analysis				Results of ISM	Comment
Code	Determinants	Driving	Dependence	Effectiveness	Cluster	Level	
1	Natural propensity to trust	5	21	-16	Dependent	*I*	
2	Perceived product risk	5	19	-14	Dependent	*III*	
3	Experience/knowledge of online shopping scams	14	16	-2	Linkage	*IV*	
4	Information quality	21	15	6	Linkage	*V*	
5	Website quality	21	9	12	Independent	*VIII*	
6	Brand reputation	11	16	-5	Dependent	*IV*	
7	Level of customer services	19	13	6	Linkage	*VI*	
8	Word of mouth/ reference group	10	16	-6	Dependent	*IV*	
9	Security & privacy of information	20	14	6	Linkage	*VIII*	
10	Attitude towards online shopping	3	21	-18	Dependent	*I*	
11	Online impulse buying	5	21	-16	Dependent	*I*	
12	Level of facilitation during online shopping	18	14	4	Linkage	*V*	
13	Intention to purchase	4	20	-16	Dependent	*II*	
14	Digital influencers' influence	17	15	2	Linkage	*V*	
15	Variety of product available in online shopping	19	9	10	Independent	*VIII*	
16	Return policies	20	6	14	Independent	*IX*	Key Factor
17	Order accuracy	17	11	6	Independent	*VI*	
18	Order timelines	20	9	11	Independent	*VII*	
19	Medium/mode of payment	16	14	2	Linkage	*V*	
20	Pricing policies	18	12	6	Linkage	*VII*	
21	Product delivery channel	21	13	8	Linkage	*VI*	

5. Results

Trust is important in virtual buying. Consumers are increasingly aware of virtual purchases; they still lack trust in them. The purpose of the study is to evaluate and examine the determinants of trust in virtual buying. The literature is searched for outcomes, experts are consulted for information on the paired relationships between outcomes, the ISM approach is utilized for modelling, and the MICMAC method is used for analysis. A survey of the literature that is the focus of the research project revealed twenty-one primary outcomes (Table 1). The results of ISM model show that the determinants coded as natural propensity to trust (1), attitude towards online shopping (10) and online impulse buying (11) occupy level I. Accordingly, intention to purchase (13) occupy level II; perceived product risk (2) occupy level III; experience/knowledge of online shopping scams (3), brand reputation (6) and word of mouth/ reference group (8) occupy level IV; information quality (4), level of facilitation during online shopping (12), digital influencers' influence (14) and medium/mode of payment (19) occupy level V; level of customer services (7), order accuracy (17) and product delivery channel (21) occupy level VI; order timelines (18) and pricing policies (20) occupy level VII; website quality (5), security & privacy of information (9) and variety of product available in online shopping (15) occupy level VIII and return policies (16) occupy level IX. The MICMAC findings, as shown in Fig. 2, indicate that the determinants coded as website quality (5), variety of product available in online shopping (15), return policies (16), order accuracy (17) and order timelines (18) are classified as independent. there are no determinants classified as autonomous. the determinants coded as experience/knowledge of online shopping scams (3), information quality (4), level of customer services (7), security & privacy of information (9), level of facilitation during online shopping (12), digital influencers' influence (14), medium/mode of payment (19), pricing policies (20) and product delivery channel (21) are classified as linkage. the determinants coded as natural propensity to trust (1), perceived product risk (2), attitude towards online shopping (10), online impulse buying (11) and intention to purchase (13) are classified as dependent. Table 16 presents and compares the outcomes.

6. Discussion

The evaluation and classification of the determinants affecting trust in online purchases is the main objective of the study. The use of ISM and MICMAC has helped to achieve this objective.

6.1. Discussion on results of the study:

According to the ISM findings, return policies (16) is the most important determinant, while natural propensity to trust (1), attitudes towards online shopping (10) and online impulse buying (11) are located at the top of a structural model and are therefore the least significant. Return policies (16) is also located in the independent quadrant, showing that it has the strongest driving power and least dependence power when compared to the other determinants, making it the most significant determinant in the study.

6.2. Discussion on contrasting the study with contemporary literature

The studies that we found to be somewhat comparable to and that can be contrasted with the current investigation are listed below (Table 17).

Table 17: Comparison of results of the present study with prior studies in the literature

Code	Source	Focus	Country	Variables	Method	Results
1	In hand	Determinants of trust in virtual buying	Pakistan	21	ISM	Return policies is the key factor.
2	(Aw et al., 2021)	Webrooming intention	Malaysia	Webrooming, consumer traits, smart shopping perception	Structural equation modelling	Direct or indirect effects of consumers' traits on webrooming intention
3	(Lim, 2015)	E-shopping	Malaysia	Trust, e-shopping intention, attitude, e-shopping experience	Structural equation modelling	Shows the significance of social factors, perceived ease of use, perceived usefulness, web irritation, and emotional state in the process of e-shopping.
4	(Jadil et al., 2022)	Drivers of online trust	North Africa Region	Online trust, purchase intention, attitude, risk perception	Smart PLS 3	The findings show that online trust significantly influences attitude favorably and significantly influences perceived risk negatively. Online trust and attitude positively influence purchase intention, whereas perceived risk significantly negatively influences attitude.
5	(Qureshi et al., 2019)	Impact of social media	Pakistan	Impulse Buying Behavior, Social Network Marketing, Electronic Word-Of-Mouth, Trust	SPSS software	Customers' impulsive buying behavior is positively and significantly impacted by social media.
6	(Wang et al., 2021)	Shopper-facing technologies	Worldwide	Shopping technologies, shoppers' adoption intention, shoppers' trust in technologies, technology adoption	Structural equation modelling	Task-technology fit and technology trust are found to demonstrate differentiated powers

The study of Aw et al. (2021) is based on webrooming intention. Questionnaires were used to conduct the survey. The data from a total of 280 valid respondents were examined using partial least square structural equation modelling. The findings demonstrated that customer attributes and channel-related factors had a significant direct and/or indirect impact on the intention to engage in webrooming (via smart shopping perception). It was also discovered that product category had a moderating effect on the relationship between price-comparison orientation, convenience of online search, perceived risk, and intention to webroom. There was not much information provided about the determinants. In terms of approach, respondents, scope, and outcome, this study is distinct from the one that is now being done. Lim (2015) conducted an e-commerce-based study. In this study, 320 reliable online consumer answers were collected using structural equation modelling, and the integrated model was compared. The findings emphasize the significance of perceived quality, social factors, perceived usability, enjoyment, and web irritation in the e-shopping experience. Undoubtedly, this is a commendable endeavor, but the present study is different. The study Jadil et al. (2022) is focused on factors that influence internet trust. Online trust and attitude positively influence purchase intention, while perceived risk has a significant negative impact on attitude but no significant impact on purchase intentions, according to this study. It also shows that online trust has a significant positive impact on attitude and a significant negative impact on perceived risk. Data from a total of 414 competent online users was acquired using online surveys. Using SmartPLS 3, the PLS approach was employed to test the hypotheses. It provided only a few details about the determinants. In terms of approach, respondents, scope, and outcome, this study differs from current studies. The study by Qureshi et al. (2019) uses a descriptive and explanatory research design. Regression analysis was used to ascertain the relationship between the variables (social network marketing, e-wom, trust and impulsive buying behavior). According to the results, social networking does have a positive and significant impact on consumers'

impulsive buying behavior. As a result, online retailers and marketers need to be aware of how important social networking is for motivating customers to make impulsive purchases. This study just considers two factors, impulsive purchase behavior and e-wom, which is insufficient. The new research is therefore far more extensive and unique. A study by Wang et al. (2021) used exploratory factor analysis and structural equation modelling for the data analysis (n = 508). How well customers think a technology will serve their needs when engaging in contact-avoidance-based shopping activities determines the likelihood that they will adopt it. The consequences of task-technology fit are further modified by customer confidence in these technologies. In terms of approach, respondents, scope, and outcome, this study differs from current studies. Despite the fact that these studies are pertinent to the study's topic, none of them took a complete and simple approach to the problem like the current study did. It is only appropriate to say that the investigation differs from existing literature and includes some fresh, important data.

6.3. Discussion on implications of the study

Practical implications of the study are discussed stakeholder-wise. For online sellers, the study offers new knowledge, analysis frameworks, and insights. Additionally, it establishes priorities for policymakers. The study offers online buyers a wealth of information and priorities for decision-making. Finally, a fresh framework for future research has been created by the study for researchers.

This study contributes to the corpus of information on online shopping. Theoretical understanding of the phenomenon has advanced with the recognition of the determinants that determine trust and influence virtual purchasing.

6.4. Discussion on limitations of the study & recommendations for future research to overcome limitations of currentstudy

There are some restrictions on the research. In order to treat the issue more objectively, future research should include quantitative techniques due to the fact that it is first addressed using a qualitative approach. Second, because data were gathered from respondents in Pakistan, the findings of the study can be broadly applied. Future studies could be carried out in many nations in this situation. Third, only a small number of outcomes are examined; as a result, next research can add more findings and repeat the study.

6.5. Contribution of the study

The study added information to the literature in the following areas: (i) a verified/refined list of determinants of trust in virtual buying; (ii) ISM model; (iii) MICMAC diagram; (iv) knowledge on the driving/dependence power of each determinant; (v) discussion on model/analysis qua reality in contrast to contemporary literature.

7. Conclusion

The purpose of this study was to identify the determinants that influence trust while making virtual purchases, to understand the connections between these contributing determinants, and to apply a suitable hierarchical framework to them. This study aims to provide answers to queries about the determinants that should be taken into account while developing trust in online purchases and how to contextually relate these determinants. The aim of the study to evaluate and examine the determinants of trust in virtual buying. The literature is utilised to identify the determinants, expert data on the paired relationships between the determinants is gathered, ISM is used for modelling, and MICMAC is used for analysis. This study is useful for online buyers, online sellers, policy makers and researchers. The paper examines methods used in the literature to determine factors that influence virtual purchasing trust, the ISM approach for structuring and hierarchizing relationships, and MICMAC analysis for classification. The ISM model shows that the determinants coded as 1, 10 and 11 occupy level I. Accordingly, 13 occupy level II; 2 occupy level III; 3, 6 and 8 occupy level IV; 4, 12, 14 and 19 occupy level V; 7, 17 and 21 occupy level VI; 18 and 20 occupy level VII; 5, 9 and 15 occupy level VIII and 16 occupy level IX. The MICMAC findings indicate that the determinants coded as 5,15,16,17 and 18 are classified as independent. There are no determinants classified as autonomous. The determinants coded as 3,4,7,9,12,14,19,20 and 21 are classified as linkage. The determinants coded as 1,2,10,11 and 13 are classified as dependent. The overall findings of this study's research indicate that “return policies” is a crucial aspect of virtual purchasing and have a big impact on people's trust in internet purchases. This one clear-cut, independent outcome serves as the catalyst for the remaining outcomes.

References

Abbass, K., Asif, M., Niazi, A. A. K., Qazi, T. F., Basit, A., & Al-Muwaffaq Ahmed, F. A. (2022). Understanding the interaction among enablers of quality enhancement of higher business education in Pakistan. *PloS One*, *17*(5), e0267919.

Ahmad, M., Tang, X. W., Qiu, J. N., & Ahmad, F. (2019). Interpretive structural modeling and MICMAC analysis for identifying and benchmarking significant factors of seismic soil liquefaction. *Applied Sciences*, *9*(2), 233.

Ali, A., Audi, M., Nisar, S., & Senturk, I. (2022). Determinants of Public Procurement Efficiency: A Comprehensive Study of Public Procurement Rules of Punjab, Pakistan. *Empirical Economics Letters*, 21(3), 51-68.

Anantharaman, R., Prashar, S., & Vijay, T. S. (2022). Uncovering the role of consumer trust and bandwagon effect influencing purchase intention: an empirical investigation in social commerce platforms. *Journal of Strategic Marketing*, 1-21.

Attri, R., Dev, N., & Sharma, V. (2013). Interpretive structural modelling (ISM) approach: an overview. *Research journal of management sciences*, *2*(2), 3-8, 2319-1171.

Audi, M., & Ali, A. (2023). Public Policy and Economic Misery Nexus: A Comparative Analysis of Developed and Developing World. *International Journal of Economics and Financial Issues*, 13(3), 56-73.

Aw, E. C. X., Basha, N. K., Ng, S. I., & Ho, J. A. (2021). Searching online and buying offline: Understanding the role of channel-, consumer-, and product-related factors in determining webrooming intention. *Journal of Retailing and Consumer Services*, *58*, 102328.

Cai, Y., & Xia, C. (2018). Interpretive structural analysis of interrelationships among the elements of characteristic agriculture development in Chinese rural poverty alleviation. *Sustainability*, *10*(3), 786-805.

Clayton, M. J. (1997). Delphi: a technique to harness expert opinion for critical decision-making tasks in education. *Educational psychology*, *17*(4), 373-386.

Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of business research*, *117*, 284-289.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS quarterly*, 27(1) 51-90.

Godet, M. (1986). Introduction to la prospective: seven key ideas and one scenario method. *futures*, *18*(2), 134-157.

Jadil, Y., Rana, N. P., & Dwivedi, Y. K. (2022). Understanding the drivers of online trust and intention to buy on a website: An emerging market perspective. *International Journal of Information Management Data Insights*, *2*(1), 100065.

Lim, W. M. (2015). Antecedents and consequences of e-shopping: an integrated model. *Internet Research*, 25(2), 184-217.

Niazi, A. A. K., Qazi, T. F., & Basit, A. (2019). An interpretive structural model of barriers in implementing corporate governance (CG) in Pakistan. *Glob. Region. Rev*, *4*, 359-375.

Pu, X., Zhang, S., Ji, B., & Han, G. (2021). Online channel strategies under different offline channel power structures. *Journal of Retailing and Consumer Services*, *60*, 102479.

Qureshi, P. A., Murtaza, F., & Kazi, A. G. (2019). The impact of social media on impulse buying behaviour in Hyderabad Sindh Pakistan. *International Journal of Entrepreneurial Research*, *2*(2), 8-12.

Shahbaz, M., Ahmed, K., Nawaz, K., & Ali, A. (2019). Modelling the gender inequality in Pakistan: A macroeconomic perspective.

Shaukat, M. Z., Scholz, M., Qazi, T. F., Niazi, A. A. K., Basit, A., & Mahmood, A. (2021). Analyzing the stressors for frontline soldiers fighting against coronavirus disease 2019 pandemic. *Frontiers in psychology*, 4904.

State Internet Information Office, 2018. The 42nd statistical report on the development of Internet in China. http://www.cnnic.net.cn/hlwfzyj/hlwxzbg/hlwtjbg/201808/ t20180820_70488.htm.

Sushil, A. (2017). Modified ISM/TISM process with simultaneous transitivity checks for reduced direct pair comparisons. *Global Journal of Flexible Systems Management*, *18*(4), 331-351.

Sushil. (2018). How to check correctness of total interpretive structural models? *Annals of Operations Research*, *270*(2), 473-487.

Wang, S. W., Ngamsiriudom, W., & Hsieh, C. H. (2015). Trust disposition, trust antecedents, trust, and behavioral intention. *The Service Industries Journal*, *35*(10), 555-572.

Wang, X., Wong, Y. D., Chen, T., & Yuen, K. F. (2021). Adoption of shopper-facing technologies under social distancing: A conceptualization and an interplay between task-technology fit and technology trust. *Computers in Human Behavior*, *124*, 106900.

Warfield, J. N. (1973). On arranging elements of a hierarchy in graphic form. *IEEE Transactions on Systems, Man, and Cybernetics*, (2), 121-132.

Warfield, J. N. (1974). Toward interpretation of complex structural models. *IEEE Transactions on Systems, Man, and Cybernetics*, (5), 405-417.

Zhuang, H., Leszczyc, P. T. P., & Lin, Y. (2018). Why is price dispersion higher online than offline? The impact of retailer type and shopping risk on price dispersion. Journal of Retailing, 94(2), 136-153.

Annexure I
Questionnaire 1
Evaluating the Determinants of Trust in Virtual Buying: An Interpretive Structural Modeling Approach
Verification of highly relevant factors

If you are agreed to participate, please fill the following table. You are requested to evaluate as to whether the determinants are relevant, important and necessary. If your answer is yes, please written "Y" otherwise write "N" in blank column. You may suggest to add, delete, alter, merge or change any determinant at the space provided under table.

Sr.	Determinants	Definitions	Yes/No
1	Interpersonal comfort	In e-business context, it means consumers own comfort to buy online.	
2	Natural propensity to trust	Propensity to trust is an individual difference characteristic that refers to the general tendency for someone to trust other individuals.	
3	Perceived product risk	Product risk is defined as the uncertainty about risk related to the quality of the product.	
4	Experience/knowledge of online shopping scams	Customers have past experience or knowledge about online shopping scams in which scammers pretending to be legitimate online sellers, having a fake website or a fake ad on a genuine retailer site.	
5	Information quality	The quality and quantity of information provides by the virtual business website is sufficient or not to influence the consumers.	
6	Website quality	The extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery of products and services, easy to search and use, as well as providing valuable and accurate information.	
7	Brand reputation	Brand reputation is the image of virtual business seen by the internet users.	
8	Level of customer services	Ecommerce customer service is how online businesses provide assistance to customers with everything from making online purchase decisions to resolving issues.	
9	Word of mouth/ reference group	Word-of-mouth is any positive or negative statement made by a previous, actual, or potential customer about a product or an organization to more than one person or institution via the internet.	
10	Security & privacy of information	Virtual business ensures security & privacy of login credentials or credit card details of their customers.	
11	Attitude towards online shopping	Consumer's attitude towards virtual shopping refers to their mental state in terms of making online purchases.	
12	Online impulse buying	Online impulse buying is generally considered a consumer behavior stimulated by a unexpected, often powerful and persistent urge to quickly purchase something.	
13	Level of facilitation during online shopping	There is no need to get dressed and drive to physical shops. You can easily visit their website; find the item you need.	
14	Buyers' personality	Personality traits reflect people's characteristic patterns of thoughts, feelings, and behaviors.	
15	Intention to purchase	Customer online purchase intention is defined as the construct that gives the strength of a customer's intention to buy online.	
16	Digital influencers' influence	Influencers are influencing the consumer to their buying choices and leads to impulsive buying.	
17	Variety of product available in online shopping	The quantity of different product types provided by different online retailer.	
18	Interaction with other online customers	Online customer interaction refers to any online interaction company have with their customers through channels such ads and social media.	
19	Return policies	A return policy lets clients know what things can be returned and for what reasons, as well as the time period over which returns are acknowledged.	
20	Terms and conditions of the order	Every online shopkeeper offering different terms and conditions of their product.	
21	Order accuracy	It includes correct place of shipment, right quantities of the correct products and the agreed price to be paid. Orders with maximum efficiency and minimum errors.	
22	Order timelines	Timeliness refers to the timely delivery of the product to the customer.	
23	Medium/mode of payment	MOP means the way of payment (e.g., through cash, banking system, credit card, ATM, easypaisa, online transfer, paypal etc) including the knowledge, comfort and access of the customer.	
24	Pricing policies	Virtual shopkeepers' way to deal with deciding the cost at which it offers a product to the online customers.	
25	Product delivery channel	Product delivery channel represents a chain of intermediaries through which the final buyer receives their products.	

Annexure II
Questionnaire 2
Evaluating the Determinants of Trust in Virtual Buying: An Interpretive Structural Modeling Approach
Approximately 30 minutes required to fill
Questionnaire

Section 2: Research Questionnaire

1. Fill only white cell.
2. Contextual relationship "leads to"
3. What to enter in the white cells?
- Enter V when the row influences the column
- Enter A when the column influences the row
- Enter O when there is no relation between the row and the column
- Enter X when row and column influence each other
4. Definition/description of each determinant is given in annexure for ready reference of respondents.

Code	Determinants	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Natural propensity to trust																					
2	Perceived product risk																					
3	Experience/knowledge of online shopping scams																					
4	Information quality																					
5	Website quality																					
6	Brand reputation																					
7	Level of customer services																					
8	Word of mouth/ reference group																					
9	Security & privacy of information																					
10	Attitude towards online shopping																					
11	Online impulse buying																					
12	Level of facilitation during online shopping																					
13	Intention to purchase																					
14	Digital influencers' influence																					
15	Variety of product available in online shopping																					
16	Return policies																					
17	Order accuracy																					
18	Order timelines																					
19	Medium/mode of payment																					
20	Pricing policies																					
21	Product delivery channel																					

Sr.	Determinants	Definitions
1	Natural propensity to trust	Propensity to trust is an individual difference characteristic that refers to the general tendency for someone to trust other individuals.
2	Perceived product risk	Product risk is defined as the uncertainty about risk related to the quality of the product.
3	Experience/knowledge of online shopping scams	Customers have past experience or knowledge about online shopping scams in which scammers pretending to be legitimate online sellers, having a fake website or a fake ad on a genuine retailer site.
4	Information quality	The quality and quantity of information provides by the virtual business website is sufficient or not to influence the consumers.
5	Website quality	The extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery of products and services, easy to search and use, as well as providing valuable and accurate information.
6	Brand reputation	Brand reputation is the image of virtual business seen by the internet users.
7	Level of customer services	Ecommerce customer service is how online businesses provide assistance to customers with everything from making online purchase decisions to resolving issues.
8	Word of mouth/ reference group	Word-of-mouth is any positive or negative statement made by a previous, actual, or potential customer about a product or an organization to more than one person or institution via the internet.
9	Security & privacy of information	Virtual business ensures security & privacy of login credentials or credit card details of their customers.
10	Attitude towards online shopping	Consumer's attitude towards virtual shopping refers to their mental state in terms of making online purchases.
11	Online impulse buying	Online impulse buying is generally considered a consumer behavior stimulated by a unexpected, often powerful and persistent urge to quickly purchase something.
12	Level of facilitation during online shopping	There is no need to get dressed and drive to physical shops. You can easily visit their website; find the item you need.
13	Intention to purchase	Customer online purchase intention is defined as the construct that gives the strength of a customer's intention to buy online.
14	Digital influencers' influence	Influencers are influencing the consumer to their buying choices and leads to impulsive buying.
15	Variety of product available in online shopping	The quantity of different product types provided by different online retailer.
16	Return policies	A return policy lets clients know what things can be returned and for what reasons, as well as the time period over which returns are acknowledged.
17	Order accuracy	It includes correct place of shipment, right quantities of the correct products and the agreed price to be paid. Orders with maximum efficiency and minimum errors.
18	Order timelines	Timeliness refers to the timely delivery of the product to the customer.
19	Medium/mode of payment	MOP means the way of payment (e.g., through cash, banking system, credit card, ATM, easypaisa, online transfer, paypal etc) including the knowledge, comfort and access of the customer.
20	Pricing policies	Virtual shopkeepers' way to deal with deciding the cost at which it offers a product to the online customers.
21	Product delivery channel	Product delivery channel represents a chain of intermediaries through which the final buyer receives their products.

Annexure III (Profiles of panel of experts)

List of first panel

Code	Designation	Qualification	Experience	Organization
1	Assistant Prof	PhD	13 years	University of the Punjab, Lahore
2	Lecturer	MS	7 years	University of Central Punjab
3	Lecturer	PhD Engineering	10 years	GCU, Lahore
4	Associate Professor	PhD	12 years	University of the Punjab Lahore
5	Lecturer	PhD	5 years	LCWU
6	Assistant Professor	PhD	34 years	Taif University Saudi Arabia
7	Lecturer	MSc Engineering	12 years	University of the Punjab
8	Lecturer	MPhil	11yeaes	QAU
9	Assistant Professor	PhD	13 years	University of Education
10	Associate Professor	PhD	16 years	LCWU Lahore
11	Assistant Professor	PhD	15 years	University of Central Punjab
12	University Lecturer	MPhil	10 years	University of Lahore
13	Senior Lecturer	MBBS, MPhil	10 years	SIHS
14	Assistant Professor	PhD	22 years	Bahauddin Zakariya University
15	Assistant Professor	PhD	10.5 years	AED, UET
16	Assistant Professor	PhD	13 years	UET Lahore

List of second panel

Code	Organization	Designation	Experience
1	Daraz Marketplace	Ecommerce business owner	5-10 years
2	Amazon	Virtual Assistant	5-10 years
3	Plannerella	Owner	Up to 5 years
4	Ali Baba	Import Supervisor	5-10 years
5	Ibex	Customer Support Executive	5-10 years
6	HT Enova	Owner	Above 15 years
7	Amritsari Sweets	Owner	Above 15 years
8	Cloudplex	Solution Architect	7 years
9	Climate Alpha	Principle Software Engineer	5-10 years
10	Hotelkeyapp	Senior Software Engineer	10 years
11	Systems Ltd	Senior Managing Consultant	10-15 years
12	Style Textile Pvt. Ltd	Executive Sustainability	5-10 years
13	Texpak	Environmental Engineer	Up to 5 years
14	UCP	Lecturer	5-10 years
15	UCP	Asst. Professor	5-10 years
16	PU	Asst. Professor	5-10 years
17	PU	Asst. Professor	10-15 years
18	Punjab Police	Sub Inspector	5-10 years
19	District Bar Association	Advocate	10 years
20	SECP	Deputy Registrar	10-15 years
21	Taif University Saudi Arabia	Asst. Professor	34 years
22	Nearpeer.org	Sales Specialist	Up to 5 years
23	Pacific Delta Shipping	Head Sales Manager	Above 15 years
24	Total Parco Pk Ltd	Project Manager	Up to 5 years
25	UET	Teaching Asst.	5-10 years
26	Soneari Bank Ltd	Relationship Manager	5-10 years
27	Sage Freight	President	10-15 years
28	Ayrax Technologies	Digital Marketing Head	5-10 years
29	eSkill by elite commerce	Senior Digital Marketer	5-10 years