

Challenges of Digital Marketing Adoption in FMCG Sector in Pakistan: A MICMAC-ISM Approach

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Abstract

The study is aimed to analyze the interrelationships of challenges of digital-marketing adoption in Fast Moving Consumer Goods (FMCG) sector in Pakistan. The design comprises of review of up-to-date literature, primary data gathering, modeling and analysis. The data are collected through survey from an expert's panel recruited from stakeholders on the basis of predetermined criteria by using matrix type questionnaire. The literature discourse for extraction of list of challenges, Interpretive Structural Modeling (ISM) to extract the underlying model of interrelationships, and Matriced' Impacts Croise's Multiplication Appliquée a UN Classement (Cross Impact Matrix Multiplication Applied to Classification) popularly known as MICMAC for analysis are employed as research methods. Results of literature survey reveal that there are total fifteen challenges of digital-marketing adoption in FMCG-sector. Results of ISM modeling show that customers' digital engagement, consumer trust concerns, engaging relevant content, utilizing multi-media channels, integration of AI, continuous optimization, building digital capabilities, marketing innovation, responsive customer service, and handling new sources of data occupy Level I. Managing supplier & customer coordination occupies Level II. Organizational resistance occupies Level III. Integration of online and offline channels occupies Level IV. Data privacy and security occupies Level V. Technological barrier occupies Level VI. The results of data-centric and scale-centric MICMAC analysis substantiate the results of ISM modeling. It is a real time data based unique type of study that provides understanding to stakeholders particularly to marketers, regulators, FMCG managers, researchers and technologists.

Keywords: Digital Marketing, FMCG-sector, Pakistan, MICMAC, Marketing Innovation, AI Integration in Marketing.

1. Introduction

The FMCG-sector is one of the vital sectors of the economy because it supplies daily necessities to consumers. It drives economic growth through high-volume sales and job creation. It supports numerous ancillary industries e. g. packaging and advertising. It

provides consistent tax revenues for governments, and serves as an indicator of overall economic health. Its continuous innovation to meet evolving challenges. The technological developments have changed a landscape of marketing. The eruption of COVID pandemic in December 2019 has exacerbated the change in marketing backdrop. It has accelerated the adoption of digital-marketing across the board (Chowdhury & Nath, 2024). The digitalization has become a vital phenomenon to be understood by FMCG firms, investors, investment analysts & managers, the government, and policymakers. FMCG-firms are the most affected stakeholders.

Although the threats of new entrants into FMCG-sector are low since it requires large investments to be competitive (Oraman et al. 2011) but still they are susceptible to challenges. For developing any strategy, the marketers first need to assess trends into globalization in the industry which is driven by market dynamics like economic/environmental, and/or competitive conditions. Thain and Bradley (2014) affirmed that CUBEical Thinking for FMCG can provide FMCG manufacturers i) transparent, ii) consistent and iii) easy-to-understand framework for insight into interplay dynamics among brands, communication channels, and consumers. Ma et al. (2020) using semi-structured interviews and applying factor-mapping-grid argued that there exists a general desire to reduce plastic from FMCG-sector but there also exists a reluctance to be the first one. The situation 'we will if you will' is observed in reality. The consumers are equally a barrier in transition and they act as a double-edged sword in FMCGs sector. Khalil and Villace (2021) found that price, place and promotion except product has an interface with perceived quality of FMCG customers at the same time these relationships are also mediated through positive word of mouth. It is also a hot topic in Pakistan viz: Dantas et al. (2023) conducted a research study in the context of Pakistan and stated that green packaging, multisensoring packaging, and consumer perception directly impact on environmental sustainability. Ansari et al. (2024) asserted that GHRM depend on green government policy, particularly environmental policies, green leadership, top management support, and green health & safety policies. Qureshi et al. (2019) carry research in the context of relationship between job satisfaction and job performance of employees of the FMCG-sector of Pakistan and bolstered that normative commitment is the most influential form of organizational commitment, whereas, continuous commitment is the least influential in impacting job satisfaction. It also reached to a conclusion that there is a significant association of three forms of commitment to affect job satisfaction of employees positively. Gupta et al. (2022) showed that high cost of investment, lack of monetary resources, inadequate internet connectivity, lack of IT infrastructure and unclear economic benefit of digital investment are the top five challenges to implement innovative digitalization technologies during and post pandemic situations. It revealed that insights into digitalization can be of high value to managers and researchers therefore should be explored deeply. It has become utmost necessary to investigate the challenges of digital marketing adoption in FMCG sector in Pakistan. Understanding the interrelationships of

challenges in digital-marketing adoption in FMCG-sector is vital for businesses to succeed. These challenges, if addressed timely and strategically, can lead to enhanced customer satisfaction, engagement, brand visibility & loyalty, and ultimately into increased sales and market share (Chowdhury & Nath, 2024).

There is a research gap in this area since it is relatively un-crystallized area of research, therefore, there is a wide scope of exploratory studies. It has become imperative to explore particularly the interrelationships of challenges of digital-marketing adoption as an aftermath of COVID pandemic (Chowdhury & Nath, 2024). Interdependencies and hierarchies in the challenges are vital phenomenon that deserves immediate attention for redressal. The research problem under investigation is to analyze the interrelationships of challenges of digital-marketing adoption in FMCG-sector in Pakistan. The research objectives include i) to unveil the array of challenges of digital-marketing adoption in FMCG-sector in Pakistan, and ii) to hierarchalize them and determine the interrelationships, relevance and dependencies. An array of methodological choices has been considered to achieve these objectives like ELECTRE, FANP, GRA, MOORA, Multi-MOORA, IPA, IRP, ISM, MADM, MICMAC, TACTIC, TOPSIS, AHP, ANP, COPRAS-G, DEA, DEMATEL, PROMETHEE, RIDIT, SWARA, VIKOR, WASPAS, etc. ISM coupled with MICMAC analysis is found to be the most appropriate. The study has profound theoretical and practical implications for stakeholders because its findings will be useful in policy decisions. Findings will also be helpful to stakeholders by offering deeper insights of the phenomenon. It has important practical implications for FMCG firms, investors, investment analysts and managers, the government, and policymakers since it provides closer view and understanding of challenges posed in real world.

The study contributes, i) a comprehensive list of challenges of digital-marketing adoption in FMCG-sector in Pakistan, ii) a structural model, iii) driving-dependence diagram (scale centric), iv) driving-dependence diagram (data-centric), and v) a lot of information on hierarchies, inter-factor relationships, direction of relationships, and dependencies etc. The remaining study is represented as: literature review, methodology, data, modeling, analysis, result, discussion, & conclusion.

2. Literature Review

The literature review is a necessary part of the research studies since it prevents from objectionable duplication and tells what is done so far till date about the phenomenon under investigation and what needs to be done. It also sets the very outset of the study. Therefore, the authors have reviewed the reasonable quantity of contemporary literature about the issue under study. The research data bases of world-renowned publishers: Wiley Online Library, Emerald Insight, Elsevier (Science Direct), Taylor & Francis Online, JStor, and Springer Link etc. have been explored for literature survey using the advanced search filters. Using the google as search engine the keywords for search have been used as: challenges of digital-marketing, digital-marketing adoption, digital-marketing adoption in FMCG, challenges of digital-marketing adoption in FMCG, interrelationships of

challenges of digital-marketing, FMCG-sector in Pakistan, problems of FMCG, issues of FMCG-sector in Pakistan, etc.

The search generated hundreds of results out of that selected relevant research articles are reviewed and few of them which seemed to be highly relevant are reported here. Remaining are not reported here for the sake of brevity. Fornari et al. (2009) ascertained that product innovation positively contributes to sales performance of retail outlets in mature subcategories. Woodside and Summers (2011) buttressed that marketers must understand to maximize their packaging and sponsorship investments. Fornari et al. (2013) OLS and GMM techniques delineated that assortment share plays a crucial role to determine private label-sales growth. Ali and Dubey (2014) bolstered that customer satisfaction is related to their expectations. It is very important for the organization to understand the expectation of the customers and retailer and if the retailer's expectation is met, it can lead to customer satisfaction. Kuchеров and Zhiltsova (2021) conducted a research study in the context of Russia and proclaimed that using social media for recruitment & employer branding needs, expected content, and the role of particular social media tools to enhance employer branding programs in FMCG. Duong et al. (2022) suggested that flagship stores do not serve as potential alternative to traditional retail outlets for FMCG particularly in food brands. Primadasa, et al., (2025) suggests SMEs adopting ethical, environmentally conscious business strategies.

Gupta et al. (2022) reached to a conclusion that “high cost of investment”, “lack of monetary resources”, “inadequate internet connectivity”, “lack of IT infrastructure” and “unclear economic benefit of digital investment” are top five barriers in implementing innovative-digitalization-technologies in most of the developing countries. Hudnurkar (2022) exposed that the need for sustainable packaging is obvious, however, the gap between that need and FMCG's ability is also apparent. Jit-Singh-Mann and Kaur (2013) deployed MANOVA and found that hypotheses about differences in branding strategies across the sectors vary over the time. Malshe et al. (2022) investigated marketing strategy implementation impediments and remedies and concluded that both level-specific and cumulative effects of impediments necessitate prescriptive remedies for stabilizing the implementation process. Najafi et al. (2022) bolstered that AIoT has profound industrial impact and can have a powerful transformation on different businesses. It gained high degree of importance especially in FMCG industries. Niyas and Kavida (2022) studied FMCGs' financial brand values using an appropriate financial-brand-valuation-model and revealed that brand value has a contemporaneous effect on stock-prices, but with negative three-year time-lagged effect. Wilkins and Ireland (2022) carried a research study in the context of margin management and consumer preferences and resulted that pack quantity is least important product attribute, therefore, manufacturers may have a better chance of maximizing profit by reducing pack quantity, rather than increasing price or lowering product quality.

Azamat et al. (2023) buttressed that majority of FMCGs are undervalued in terms of the value of intangible assets by comparing the market value of intangible assets with the fundamental and theoretical value. The empirical findings in a way support the positive impact of intangible assets on companies' value based using dynamic panel approach. Kamakela et al. (2023) collected data from 14 FMCG manufacturing firms indicated that 29% of the firms are using digital-technology to predict and create visibility in supply chain, 8% of the firms are still within the emerging level of supply risk-capabilities. Khayer et al. (2023) employed Mixed-Integer Linear Programming as research methodology and ascertained the KPI scores for procurement, manufacturing, and distribution were 90%, 86.67%, and 80.30% correspondingly. Ahuja and Tabeck (2024) asserted that marketers should leverage the social media presence to enhance brand trustworthiness, brand relationships, congruence and positioning.

Biswas et al. (2024) employed Fuzzy TOPSIS for ranking of the solutions in transport sector and argued that the appropriate transport policy is the top solutions that can play a vital role in improving vehicle-fill rate in the long run in FMCG-sectors. Indasari and Tjahyanto (2024) used Latent Semantic Analysis and revealed that the effect of data preparation yielded a result of 0.092 outperforming data without stop list and word-based stop lists available by the stop words library, even though the execution time was 0.01 seconds longer than others. Long et al. (2024) employed multivariate regression to test eight factors affecting customer engagement and found that self-congruity, social media marketing, brand warmth, social influence, economic benefit, and brand attachment positively influence the social customer engagement. Makgabo et al. (2024) asserted that the Industry 4.0 does improve quality in the FMCG-sector. Primary contributors are: operational & financial performance, customer focus, education & training, and production processes. Wang et al. (2024) claimed that brand image and design-driven attribute significantly affect purchase intention, whereas, sensory experience does not have such affect. One can also find studies that developed a concise checklist that provides business marketing researchers a shortcut for implementation of strategies in coming projects. Kaneko and Kajikawa (2025) suggested that a quantification approach for analyzing technological portfolio in the basis of CIT. Morgan et al. (2025) identified that inherent trade-offs between different components and stages of marketing strategy-implementation are important causes of implementation problems and failures. It also confirmed that to determine how best to identify the kinds of implementation capabilities that can best enable to identify or select among the inherent trade-offs. Rashid et al. (2025) affirmed that the better supplier trust and the use of integrated technology enhance capability of the organization to better respond to disturbances. Based on the literature review, a list of challenges (Step 1 & 2) of digital-marketing adoption in FMCG-sector is generated as Table-1.

Table 1: Challenges of Digital-Marketing Adoption in FMCG-Sector

Code	Challenges	Description	Source
1	Organizational resistance	Senior-leadership is reluctant to invest in digital without clear return on investment.	Moorman and Day (2016)
2	Customers' digital engagement	Digital permits to shape messages to individual consumer preferences.	Meire et al. (2019)
3	Technological barriers	The legacy system does not support to advance digital-marketing tools.	Longoni and Cian (2022)
4	Data privacy and security	Data security and privacy is a persistent challenge the FMCG-sector.	McCarthy et al. (2017)
5	Consumer trust concerns	Customers are increasingly suspicious of how their data is being used.	Hillebrand et al. (2015)
6	Engaging and relevant content	Content does not resonate with consumers and drives disengagement.	Chowdhury and Nath (2024)
7	Utilizing multimedia channels	Video content may not particularly be effective in capturing audience attention.	Chowdhury and Nath (2024)
8	Continuous optimization	It is quite challenging to continuously hone the campaigns based on performance metrics.	Chowdhury and Nath (2024)
9	Integration of AI	Integration of AI in marketing decision-making is somehow challenging.	Hoffman et al. (2022)
10	Integration of online and offline channels	Bridging the gap between digital and physical channel is a bit challenging.	Batra and Keller (2016)
11	Building digital capabilities	It is somehow challenging to invest in continuous training to upskill the marketing team.	Meire et al. (2019)
12	Marketing Innovation	Acceptance and adoption of new digital tools and platforms.	Longoni and Cian (2022)
13	Responsive customer service	Swift responses are essential and challenging in digital-marketing.	Hollebeek et al. (2023)
14	Handling new sources of data	Handling new sources of data for customer acquirement and retention are challenging.	McCarthy et al. (2017)
15	Managing supplier & customer coordination	To provide the customized offer, there coordination is important.	Wang et al. (2017)

3. Research Methodology

Post-positivist research philosophy is followed in the study with inductive research approach. The design comprises of review of up-to-date literature, primary data gathering, modeling and analysis. Population under study is the folks of stakeholders of FMCG-sector. The study follows purposive sampling design and the sample size is twenty-three experts from the stakeholders. The data are collected through survey from a panel of experts recruited from the stakeholders on the basis of predetermined criteria by using matrix type questionnaire (the questionnaire is available upon reasonable request from any reader). The literature discourse for extraction of list of challenges, ISM to extract the underlying model of interrelationships, and MICMAC for analysis are employed as research methods. Results of literature survey reveal that there are (total) fifteen challenges of digital-marketing adoption in FMCG-sector. ISM and MICMAC are popular techniques of modeling and analysis to simplify the conundrum situations (Attri et al., 2013; Nazir et al., 2024; Rashid et al., 2025; Sushil, 2017; Warfield, 1973).

3.1 Experts' Panel

Non-probability based purposive sampling design and data collection from an expert's panel (Step 3) particularly that of experts on the phenomenon under research is opted when there is no data available or the available data is not reliable (Attri et al., 2013; Warfield, 1973). Since the data on the issue under study is not available in secondary form, therefore, it is imperative to elicit some data from the experts from the field (Step 4). There are two types of panels of experts i.e. homogenous and heterogenous. The size of panel varies from eight experts (minimum) to twenty-five-experts (optimum) (Clayton, 1997; Khan & Khan, 2013). The study has twenty-three valid responses of experts for building the modeling & analysis thereon. The criteria of recruitment of experts on panel includes: i) university graduate as minimum qualification, ii) ten years as minimum relevant field experience, iii) some acumen of research to understand the basics of the initiative, iv) willingness to participate in the study, and v) able to spare reasonable time to participate to the study in office setting (Sushil, 2017; Attri et al., 2013; Warfield, 1974). The techniques of data collection used is face-to-face one-on-one semi-structure interview recoded on a VAXO based questionnaires suitable for ISM based studies (Li & Yang, 2014). The interviews are conducted in office setting of the experts.

Fifteen steps classical procedure of ISM and MICMAC is applied step-wise i.e. ascertainment of an array of challenges (Step 1), verification of challenges (Step 2), recruitment of experts' panel (Step 3), collection of data (Step 4), aggregation of data & SSIM (Step 5), conversion of symbols into binary matrix (Step 6), making the binary matrix into fully transitive matrix (Step 7), partitioning the transitive matrix into sub-matrices for extracting levels (Step 8), rearranging the transitive matrix to reflect the model on diagonals (Step 9), summary representation of ISM process (Step 10), preparing the ISM Model (Step 11), preparing scale-centric MICMAC diagram (Step 12), preparing

data-centric MICMAC diagram (Step 13), juxtaposing the results (Step 14), and discussion on results (Step 15).

3.2 Data

Data collection on questionnaires is aggregated (Step 5) into MS-Excel sheets using the rule ‘minority gives way to majority’ (Abdullah & Siraj, 2014; Cai et al., 2018; Li et al., 2019; Sushil, 2012).

3.3 ISM Modeling

Stepwise procedure of ISM modelling as devised and used in Dhochak & Sharma (2016); Sushil (2017); Attri et al., (2013); Warfield, (1974) is applied to the data collected i.e. Structural Self-Interaction Matrix (SSIM) Table-2 is generated from aggregated data.

Table 2: SSIM (Step 5)

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1		V	O	A	V	O	O	V	O	A	O	O	V	A	V
2			A	O	O	V	V	X	X	A	X	V	X	X	A
3				V	O	O	O	O	V	V	V	V	O	V	O
4					V	A	O	X	V	V	V	O	O	V	O
5						A	V	V	A	A	V	X	O	V	O
6							V	V	V	V	A	V	A	A	A
7								A	V	V	A	A	V	V	O
8									V	O	A	V	A	O	A
9										V	V	V	X	V	O
10											X	A	V	A	O
11												X	V	X	O
12													X	A	A
13														X	O
14															V
15															

SSIM Table-2 is converted into Initial Reachability Matrix (Step 6) Table-3 using the rules of binary coding.

Table 3: Initial Reachability Matrix

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	1	0	0	1	0	0	1	0	0	0	0	1	0	1
2	0	1	0	0	0	1	1	1	1	0	1	1	1	1	0
3	0	1	1	1	0	0	0	0	1	1	1	1	0	1	0
4	1	0	0	1	1	0	0	1	1	1	1	0	0	1	0
5	0	0	0	0	1	0	1	1	0	0	1	1	0	1	0
6	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0
7	0	0	0	0	0	0	1	0	1	1	0	0	1	1	0
8	0	1	0	1	0	0	1	1	1	0	0	1	0	0	0
9	0	1	0	0	1	0	0	0	1	1	1	1	1	1	0
10	1	1	0	0	1	0	0	0	0	1	1	0	1	0	0
11	0	1	0	0	0	1	1	1	0	1	1	1	1	1	0
12	0	0	0	0	1	0	1	0	0	1	1	1	1	0	0
13	0	1	0	0	0	1	0	1	1	0	0	1	1	1	0
14	1	1	0	0	0	1	0	0	0	1	1	1	1	1	1
15	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1

Initial Reachability Matrix Table-3 is converted into Transitive Reachability Matrix (Step 7) Table-4.

Table 4: Transitive Reachability Matrix

Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Dri
1	1	1	0	1*	1	1*	1*	1	1*	0	1*	1*	1	1*	1	13
2	1*	1	0	1*	1*	1	1	1	1	1*	1	1	1	1	1*	14
3	1*	1	1	1	1*	1*	1*	1*	1	1	1	1	1*	1	1*	15
4	1	1*	0	1	1	1*	1*	1	1	1	1	1*	1*	1	1*	14
5	1*	1*	0	1*	1	1*	1	1	1*	1*	1	1	1*	1	1*	14
6	1*	1*	0	1	1	1	1	1	1	1	1*	1	1*	1*	0	13
7	1*	1*	0	0	1*	1*	1	1*	1	1	1*	1*	1	1	1*	13
8	1*	1	0	1	1*	1*	1	1	1	1*	1*	1	1*	1*	0	13
9	1*	1	0	0	1	1*	1*	1*	1	1	1	1	1	1	1*	13
10	1	1	0	0	1	1*	1*	1*	1*	1	1	1*	1	1*	1*	13
11	1*	1	0	1*	1*	1	1	1	1*	1	1	1	1	1	1*	14
12	1*	1*	0	0	1	1*	1	1*	1*	1	1	1	1	1*	0	12
13	1*	1	0	1*	1*	1	1*	1	1	1*	1*	1	1	1	1*	14
14	1	1	0	1*	1*	1	1*	1*	1*	1	1	1	1	1	1	14
15	0	1	0	1*	1*	1	1*	1	1*	1*	1*	1	1*	1*	1	13
Dep	14	15	1	11	15	15	15	15	15	14	15	15	15	15	12	

Dep = Dependence Dri = Driving

Transitive Reachability Matrix Table-4 is then partitioned into sub-matrices i.e. (Step 8) Table-5-10 using basic concepts of set theory (Warfield, 1973).

Table-5: Level One Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
1	1,2,4,5,6,7,8,9,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14	1,2,4,5,6,7,8,9,11,12,13,14	
2	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
3	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	3	3	
4	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,8,11,13,14,15	1,2,4,5,6,8,11,13,14,15	
5	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
6	1,2,4,5,6,7,8,9,10,11,12,13,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14	<i>I</i>
7	1,2,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
8	1,2,4,5,6,7,8,9,10,11,12,13,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14	<i>I</i>
9	1,2,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
10	1,2,5,6,7,8,9,10,11,12,13,14,15	2,3,4,5,6,7,8,9,10,11,12,13,14,15	2,5,6,7,8,9,10,11,12,13,14,15	
11	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
12	1,2,5,6,7,8,9,10,11,12,13,14	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,5,6,7,8,9,10,11,12,13,14	<i>I</i>
13	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
14	1,2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	1,2,4,5,6,7,8,9,10,11,12,13,14,15	<i>I</i>
15	2,4,5,6,7,8,9,10,11,12,13,14,15	1,2,3,4,5,7,9,10,11,13,14,15	2,4,5,7,9,10,11,13,14,15	

Table 6: Level Two Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
1	1,4,15	1,3,4,10	1,4	
3	1,3,4,10,15	3	3	
4	1,4,10,15	1,3,4,15	1,4,15	
10	1,10,15	3,4,10,15	10,15	
15	4,10,15	1,3,4,10,15	4,10,15	<i>II</i>

Table 7: Level Three Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
1	1,4	1,3,4,10	1,4	<i>III</i>
3	1,3,4,10	3	3	
4	1,4,10	1,3,4	1,4	
10	1,10	3,4,10	10	

Table 8: Level Four Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
3	3,4,10	3	3	
4	4,10	3,4	4	
10	10	3,4,10	10	<i>IV</i>

Table 9: Level Five Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
3	3,4	3	3	
4	4	3,4	4	<i>V</i>

Table 10: Level Six Iteration

Code	Reachability Challenges Set	Antecedent Challenges Set	Set of Intersection Challenges	Level
3	3	3	3	<i>VI</i>

It can be observed that the partitioning of matrix into sub-matrices determined that levels of hierarchy of each challenge. These can therefore be arranged into conical matrix (Step 9) as Table-11.

Table 11: Conical Matrix

Code	2	5	6	7	8	9	11	12	13	14	15	1	10	4	3
2	1	1*	1	1	1	1	1	1	1	1	1*	1*	1*	1*	0
5	1*	1	1*	1	1	1*	1	1	1*	1	1*	1*	1*	1*	0
6	1*	1	1	1	1	1	1*	1	1*	1*	0	1*	1	1	0
7	1*	1*	1*	1	1*	1	1*	1*	1	1	1*	1*	1	0	0
8	1	1*	1*	1	1	1	1*	1	1*	1*	0	1*	1*	1	0
9	1	1	1*	1*	1*	1	1	1	1	1	1*	1*	1	0	0
11	1	1*	1	1	1	1*	1	1	1	1	1*	1*	1	1*	0
12	1*	1	1*	1	1*	1*	1	1	1	1*	0	1*	1	0	0
13	1	1*	1	1*	1	1	1*	1	1	1	1*	1*	1*	1*	0
14	1	1*	1	1*	1*	1*	1	1	1	1	1	1	1	1*	0
15	1	1*	1	1*	1	1*	1*	1	1*	1*	1	0	1*	1*	0
1	1	1	1*	1*	1	1*	1*	1*	1	1*	1	1	0	1*	0
10	1	1	1*	1*	1*	1*	1	1*	1	1*	1*	1	1	0	0
4	1*	1	1*	1*	1	1	1	1*	1*	1	1*	1	1	1	0
3	1	1*	1*	1*	1*	1	1	1	1*	1	1*	1*	1	1	1

By rearranging the challenges according to their levels result into an underlying structural model of challenges on diagonals. This whole stepwise process can be presented into in an abridged form in eye-span (Step 10) as Table-12.

Table 12: Compressed Presentation of ISM

Reachability Set																			
Antecedent Set	Level	Code	2	5	6	7	8	9	11	12	13	14	15	1	10	4	3		
	I	2	1	1*	1	1	1	1	1	1	1	1	1*	1*	1*	1*	0	14	
		5	1*	1	1*	1	1	1*	1	1	1*	1	1*	1*	1*	1*	0	14	
		6	1*	1	1	1	1	1	1*	1	1*	1*	0	1*	1	1	0	13	
		7	1*	1*	1*	1	1*	1	1*	1*	1	1	1*	1*	1	0	0	13	
		8	1	1*	1*	1	1	1	1*	1	1*	1*	0	1*	1*	1	0	13	
		9	1	1	1*	1*	1*	1	1	1	1	1	1*	1*	1	0	0	13	
		11	1	1*	1	1	1	1*	1	1	1	1	1*	1*	1	1*	0	14	
		12	1*	1	1*	1	1*	1*	1	1	1	1*	0	1*	1	0	0	12	
		13	1	1*	1	1*	1	1	1*	1	1	1	1*	1*	1*	1*	0	14	
		14	1	1*	1	1*	1*	1*	1	1	1	1	1	1	1	1*	0	14	
	II	15	1	1*	1	1*	1	1*	1*	1	1*	1*	1	0	1*	1*	0	13	
	III	1	1	1	1*	1*	1	1*	1*	1*	1	1*	1	1	0	1*	0	13	
	IV	10	1	1	1*	1*	1*	1*	1	1*	1	1*	1*	1	1	0	0	13	
	V	4	1*	1	1*	1*	1	1	1	1*	1*	1	1*	1	1	1	0	14	
	VI	3	1	1*	1*	1*	1*	1	1	1	1*	1	1*	1*	1	1	1	15	
			15	15	15	15	15	15	15	15	15	15	12	14	14	11	1		
Dependence Power																			

The model extracted on diagonals as aforementioned is represented in graphical form using directed graph (Step 11) theory since we have codes and the translation of the codes as well (Figure-1).

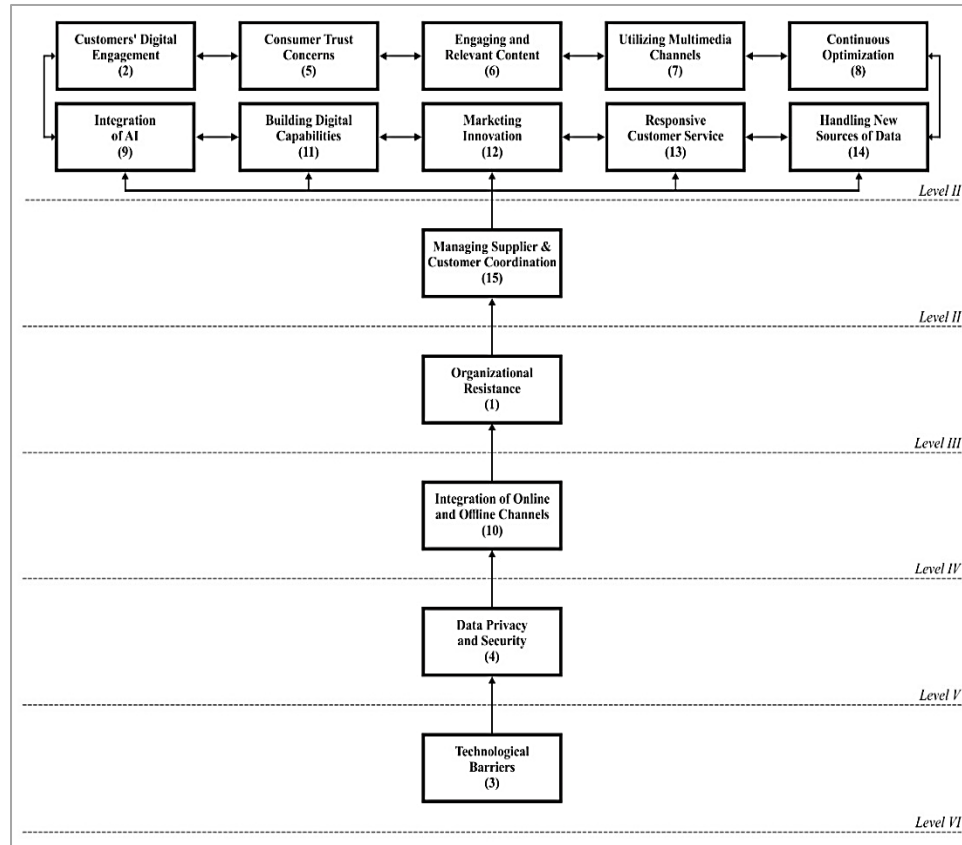


Figure 1: ISM Model

ISM model (Figure-1) show that challenges coded as (2), (5), (6), (7), (8), (9), (11), (12), (13), and (14) occupy Level I (top level- containing the least critical factors). Challenge coded as (15) occupies Level II, challenge (1) occupies Level III, challenge (10) occupies Level IV and challenge (4) occupies Level V (middle of the model – having moderate critical effects accordingly). Challenge (3) occupy Level VI (bottom level – being the most critical challenge).

3.4 MICMAC Analysis

Matriced' Impacts Croise's Multiplication Appliquée a UN Classement (MICMAC) is a structural methodology that has the capability to substantiate the results of the ISM modeling (Godet, 1986). There are two approaches to perform this analysis i.e. scale-centric approach and data-centric approach. The study uses both the approaches (Figure-2 and Figure-3 respectively) to gain deeper insights of the phenomenon.

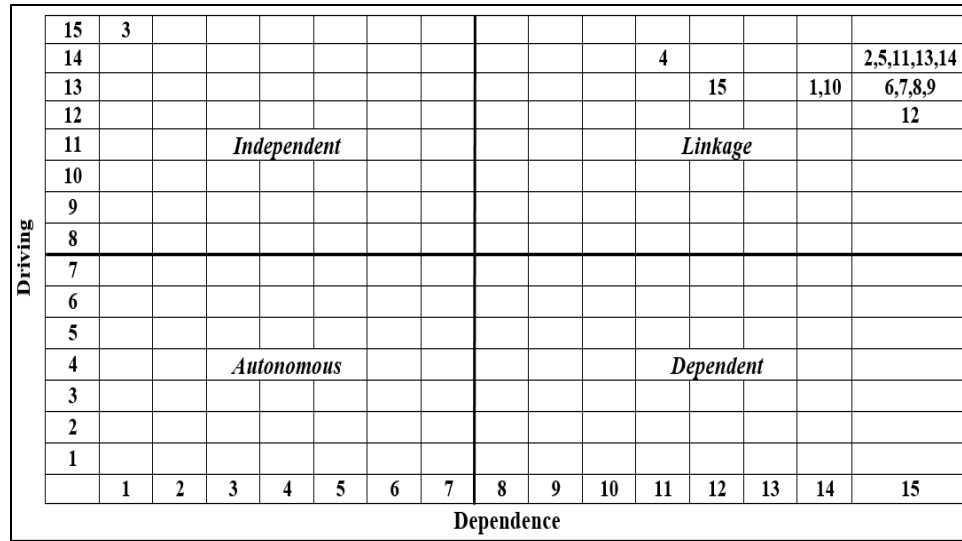


Figure 2: Driving-Dependence Diagram (Scale Centric)

Driving-dependence diagram (Step 12 - scale centric) MICMAC analysis (Figure-2) shows that challenge coded as (3) fall in independent quarter, whereas, all other challenges i.e. (1), (2), (4) to (15) fall in linkage quarter.

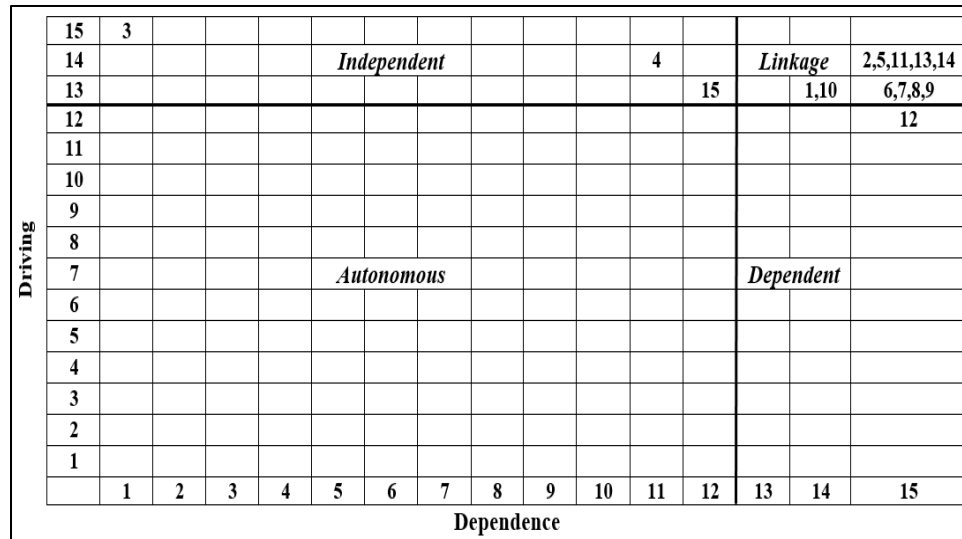


Figure 3: Driving-Dependence Diagram (Data Centric)

Driving-dependence diagram (Step 13 - data centric) MICMAC analysis (Figure-3) shows that challenges (3), (4), and (15) fall in independent quarter, whereas, remaining all i.e. (1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), and (14) fall in linkage quarter.

4. Results

Keeping in view the research problem (i.e. to analyze the interrelationships of challenges of digital-marketing adoption in FMCG-sector in Pakistan), the literature review is performed, data are collected, and modeling & analysis procedure is applied on the primary data. The results of literature survey reveal that there are total fifteen challenges of digital-marketing adoption in FMCG-sector organizational resistance (1), customers' digital engagement (2), technological barriers (3), data privacy and security (4), consumer trust concerns (5), engaging and relevant content (6), utilizing multimedia channels (7), continuous optimization (8), integration of AI (9), integration of online and offline channels (10), building digital capabilities (11), marketing innovation (12), responsive customer service (13), handling new sources of data (14), and managing supplier & customer coordination (15). The results of ISM modeling show that customers' digital engagement (2), consumer trust concerns (5), engaging and relevant content (6), utilizing multimedia channels (7), continuous optimization (8), integration of AI (9), building digital capabilities (11), marketing innovation (12), responsive customer service (13), and handling new sources of data (14) occupy Level I. Managing supplier & customer coordination (15) occupies Level II. Organizational resistance (1) occupies Level III. Integration of online and offline channels (10) occupies Level IV. Data privacy and security (4) occupies Level V. Technological barriers (3) occupies Level VI. The results of scale-centric MICMAC analysis show that challenge technological barriers (3) falls in independent quarter, whereas, remaining all i.e. organizational resistance (1), customers' digital engagement (2), data privacy and security (4), consumer trust concerns (5), engaging and relevant content (6), utilizing multimedia channels (7), continuous optimization (8), integration of AI (9), integration of online and offline channels (10), building digital capabilities (11), marketing innovation (12), responsive customer service (13), handling new sources of data (14), and managing supplier & customer coordination (15) fall in linkage quarter. The results of data-centric MICMAC analysis show that challenges technological barriers (3), data privacy and security (4), and managing supplier & customer coordination (15) fall in independent quarter, whereas, remaining all i.e. organizational resistance (1), customers' digital engagement (2), consumer trust concerns (5), engaging and relevant content (6), utilizing multimedia channels (7), continuous optimization (8), integration of AI (9), integration of online and offline channels (10), building digital capabilities (11), marketing innovation (12), responsive customer service (13), and handling new sources of data (14) fall in linkage quarter. The results of the study are robust because a classical procedure of mathematical modeling, analysis and representation is used with assistance of some computer software like EdrawMax, MS Excel etc. The results of the study are summarized and juxtaposed in Table-13 below for better comprehension (Step 14).

Table 13: Summary of Results

Result of Literature Review		Results of MICMAC Analysis				Results of ISM	Comments
Cod	Factors	Drivin	Dependenc	Effectiveness	Cluster	Level	
1	Organizational resistance	13	14	-1	Linkage	III	
2	Customers' digital engagement	14	15	-1	Linkage	I	
3	Technological barriers	15	1	14	Independent	VI	Key Factor
4	Data privacy and security	14	11	3	Linkage	V	
5	Consumer trust concerns	14	15	-1	Linkage	I	
6	Engaging and relevant content	13	15	-2	Linkage	I	
7	Utilizing multimedia channels	13	15	-2	Linkage	I	
8	Continuous optimization	13	15	-2	Linkage	I	
9	Integration of AI	13	15	-2	Linkage	I	
10	Integration of online and offline channels	13	14	-1	Linkage	IV	
11	Building digital capabilities	14	15	-1	Linkage	I	
12	Marketing Innovation	12	15	-2	Linkage	I	
13	Responsive customer service	14	15	-1	Linkage	I	
14	Handling new sources of data	14	15	-1	Linkage	I	
15	Managing supplier & customer coordination	13	12	1	Linkage	II	

The study has achieved its objective i.e. i) to unveil the array of challenges of digital-marketing adoption in FMCG-sector in Pakistan (through review of literature), and ii) to

hierarchalize them and determine the interrelationships, relevance (through ISM Modeling) and dependencies (through data/scale centric MICMAC).

5. Discussion (Step 15)

The study is aimed to analyze the interrelationships of challenges of digital-marketing adoption in FMCG-sector in Pakistan and the findings of the study have importance for FMCG firms, investors, investment analysts and managers, the government, and policymakers. The methods employed to analyze include literature discourse, ISM modeling, and MICMAC analysis. It is critical to discuss certain aspect of the study keeping in view the results. This section contains discussion on results, contrasting the results with contemporary literature, practical & theoretical implications of the study, and on limitations of the study & directions for future studies.

5.1 Discussion on Results of the Study

The results of literature discourse are summarized in Table- 1 (i.e. fifteen important challenges posed to digital-marketing adoption in FMCG-sector in Pakistan). This list is generated from scattered and scanty literature collected from wide variety of contexts that is not claimed to be exhaustive. However, it is believed that it covers the most of important ones. ISM modeling shows that ‘technological barriers (3)’ is the most critical and key challenge likely to be faced in adoption of digital-marketing in FMCG-sector in Pakistan since this challenge occupies the bottom of the model which is considered to be the most critical one according to the interpretations of ISM models. Accordingly, the challenges appearing middle and top of the model have relative moderate severe and least critical effects respectively. Therefore, the policy makers should deal with them in order of precedence and importance in practical situations. MICMAC analysis shows that challenge ‘technological barriers (3)’ (according to scale-centric MICMAC) and challenges ‘technological barriers (3), data privacy and security (4), and managing supplier & customer coordination (15)’ (according to data-centric MICMAC) fall into independent quarter, therefore, these are the drivers. All other are categorized as linkages therefore to take any action on any of the challenges need special care because any action on the linking challenges may have effect on others as well as on themselves in turn. There is no challenge as autonomous, this type of the result affirms that the factors are relevant and important to the system under study. Data-centric analysis shows that challenge ‘marketing innovation (12)’ has the potential to be categorized as dependent one. The results of MICMAC, in general, substantiate the results of ISM modeling.

5.2 Contrasting the Finding of the Study with Contemporary Literature

The overall results of the study conform to the findings of contemporary research particularly to that of Chowdhury and Nath (2024). In this context a contrast of the current study is represented in Table-14.

Table 14: Comparing with Prior Studies

Sr.	Study	Country	Focus	Variables	Results	Method
1	Current	Pakistan	Challenges of digital marketing adoption in FMCG sector in Pakistan	15 challenges	Technological barriers are the key challenge	ISM with MICMAC analysis
2	Primadasa et al. (2024)	Indonesia	Halal-Sustainable Supply Chain Management (HSSCM) indicators for SMEs	16 indicators	SMEs adopting ethical, environmentally conscious business strategies	DEMATEL, ISM & MICMAC Integrated approach
3	Ansari et al. (2024)	India	Modeling the enablers of implementing green HRM practices	9 enablers	Government policy is the key enabler	ISM-MICMAC approach
4	Ahuja and Tabeck (2024)	India	Impact of social media on various marketing aspects e.g. brand trustworthiness, relationships, congruence and positioning	5 variables of exploiting social media marketing in FMCG sector	The marketers should leverage social media presence to enhance brand trustworthiness, relationships, congruence & positioning	Multiple-case method
5	Azamat et al. (2023)	China	Organizational strategic cyber security management	6 i.e. Company Value, Intangible assets, Return on assets, Current ratio, Size leverage	There is positive impact of intangible assets on companies' value	Dynamic panel approach

Although this study is different from the contemporary literature on many counts to say in: topic of investigation, population understudy, methods, context, approach, findings, etc. These types of the studies are mostly in Indian contexts. The studies that seem similar to that of current, in fact, are on different topics and contexts but use methodologies similar to the study in hand e.g. study listed at serial number 2 & 3 seem similar since the use of MCDM techniques similar to current study but they address 'Halal-Sustainable Supply Chain Management (HSSCM) indicators for SMEs' and 'Modeling the enablers of implementing green HRM practices' respectively.

5.3 Discussion on Implications of the Study

Findings have important practical implications for FMCG firms, investors, investment analysts and managers, the government, and policymakers because it provides deeper

understanding of challenges posed to them in real time situations. The study has profound theoretical and practical implications for all these stakeholders because they can use its findings in policy decisions both in business and economic mix in short/long-run business cycles. Findings can also serve individuals/companies/non-profit organizations by offering deeper insights in the phenomenon.

5.4 Discussion on Limitations and Future Directions of the Study

The findings of the study can be used with care because it is subject to certain limitations. Firstly, limited number of research studies are reviewed and the list of challenges so generated is no claimed to be comprehensive, therefore, future studies must be designed in broader scope. Secondly, the study follows qualitative paradigm of research, therefore, it is suggested that some quantitative future studies should be designed to affirm the results thereof. Thirdly, it is conducted in the context of Pakistan, in future, the studies should be designed in different context to substantiate the generalization of the results of the study. Fourthly, the authors used the basic version of ISM modeling and MICMAC and the analysis does not offer cause & pole, therefore, it is suggested that the future studies must be designed in form TISM and polarized-TISM in order to enhance the endeavors of the study.

6. Conclusion

Admittedly, by understanding and addressing the interrelationships of challenges of digital-marketing in FMCGs can harness the power of digital-marketing to enhance customer satisfaction and engagement, build stronger brands, and achieve sustainable growth. The problem understudy is scarce and scanty literature on this issue, whereas, this is important issues that needs immediate attention, hence, the current study aims to fills gap. The design comprises of review of up-to-date literature, primary data gathering, modeling and analysis. The data are collected through survey from expert's panel recruited from the stakeholders on the basis of predetermined criteria by using matrix type questionnaire. The literature discourse for extraction of list of challenges, ISM to extract the underlying model of interrelationships, and MICMAC for analysis are employed as research methods.

Results of literature survey reveal that there are total fifteen challenges of digital-marketing adoption in FMCG-sector: organizational resistance (1), customers' digital engagement (2), technological barriers (3), data privacy and security (4), consumer trust concerns (5), engaging and relevant content (6), utilizing multimedia channels (7), continuous optimization (8), integration of AI (9), integration of online and offline channels (10), building digital capabilities (11), marketing innovation (12), responsive customer service (13), handling new sources of data (14), and managing supplier & customer coordination (15).

Results of ISM modeling show that challenges coded as (2), (5), (6), (7), (8), (9), (11), (12), (13), and (14) occupy Level I. Challenge coded as (15) occupies Level II. Challenge (1)

occupies Level III. Challenge (10) occupies Level IV. Challenge (4) occupies Level V. Challenge (3) occupies Level VI.

Results of scale-centric MICMAC analysis show that challenge coded as (3) falls in independent quarter, whereas, all other challenges i.e. (1), (2), and (4) to (15) fall in linkage quarter. Results of data-centric MICMAC analysis show that challenges (3), (4), and (15) fall in independent quarter, whereas, remaining all i.e. (1), (2), (5), (6), (7), (8), (9), (10), (11), (12), (13), and (14) fall in linkage quarter. It is a real time data based unique type of study that provides understanding to stakeholders particularly to marketers, FMCG managers, regulators, researchers and technologists. It contributes list of challenges, a structural model, and scale-centric & data centric analytical diagrams to the contemporary literature.

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