

## ROLE OF MARKETING ANALYTICS IN DATA DRIVEN DECISION MAKING USING META SYNTHESIS APPROACH

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### ABSTRACT

The digital revolution beginning in the late 1950's accelerated in late 1980's and brought in sweeping changes across different domains including marketing. Today more than 99% of the data is stored in digital format making it an important source of information for any strategic decisions including marketing. The objective of this research is to trace the evolution of marketing analytics from its inception to the big data era in the existing literature and synthesis them. A systematic literature review is undertaken. Based on the review a Meta synthesis using Sandelowski and Barroso's method (1997) is done. The research findings are newer and better information sources and algorithms entering the market such as deep learning, machine learning and artificial intelligence. The future lies in making the best use of such resources to optimize sustainable performance. The findings bring a greater understanding of analytics. It strengthens with evidence that a rapid change is occurring in marketing research with respect to application of digital data and there is an imperative need to embrace it.

**Keyword:** Marketing Analytics, Data, Decisions, Deep Learning, Meta Synthesis,

### I. INTRODUCTION

The current buzz word in all areas of business is data. It is an after effect of the technology revolution (also called as the digital age or new

media age) which started in about the beginning of the 20th century. Termed as big data, its primary sources are from machines, from social media and from online and offline transactions. Real value from such data comes only if such data can be efficiently analyzed to generate information and knowledge suitable for decision making and prediction. The spending on marketing analytics is expected to grow by 61 % and reach over 11% of the marketing budget over the next three years (CMO.org). But surprisingly only 22% of the marketers acknowledge the positive returns from analytics. (Source: Forbes Insights). This calls for a need to look back on the progress that has been made so far both in the theoretical and the application fields to identify the existing pattern and propose a point of refocus if any that may be needed. The review questions for this study are,

- What are the existing similarities in the current research area of marketing analytics?
- What are the findings of majority of studies?
- What practical inference and gap can be identified from the recent literature on marketing analytics?

### II. THEORETICAL BACKGROUND

**Stephen L. Francea, Sanjoy Ghose analysis:**

The study provides an overview of the methodologies involved in marketing analytics. It attempts to bring together findings from different areas of research. The major methodologies reviewed are visualization,

segmentation and class prediction. Methodologies such as social media network analysis, time series analysis and recommender system are not included. In the domain of visualization, the author talks about how traditionally multidimensional scaling (MDS) and factor analysis have been used to visualize marketing data. Techniques such as brand mapping for product entry decision, GIS system to analyze location problems or store performance (Hernández, 2007), parallel coordinates approach (Inselberg and Dimsdale, 1987) have been discussed. There are suggestions for R packages that can aid analysis pertaining to visualization. In the domain of segmentation, cluster analysis forms the basic methodology. Other techniques build upon this methodology. The newer models that are highlighted are

- CLUSSCALE model
- Latent class analysis

Neural network algorithms like topology representing networks (TRNs), Self-organizing maps (SOMs), and Hopfield-Kagmar (HK) neural networks, measuring customer lifetime value (CLV) (Berger and Nasr, 1998)

CLV with customer loyalty Chen et al. (2008) The need for a multi-disciplinary approach and the use of neuro science that can incorporate unconscious responses to stimuli (Venkatraman et al., 2012) is highlighted. The need to combine them with traditional approaches is also highlighted. In the domain of class prediction discriminant analysis has been developed upon and the newer improved methods include

- Support vector machines (SVMs)
- CAR (Steinberg and Colla, 2009)
- Random forests (Breiman, 2001)
- Neural networks (Zhang, 2000)

- Stochastic gradient boosting (Zhang, 2004)
- Naive Bayes (Lewis, 1998)

The suggestions by the authors include a need to gain perspectives from different algorithms, using ensemble methods, signal to noise ratio reduction, not using performance predictions as the sole criteria for judging algorithms. The general conclusion is that visualization must be art and science.

#### **Y Glen Urban, Artem Timoshenko, Paramveer Dhillon, And John R. Hauser:**

The objective of the study is to find the relevance or deep learning to marketing analytics. The process of credit card evaluation and selection of several people through the NerdWallet website was analyzed using deep learning software. The results were compared with those obtained through traditional regression methods. The results through deep learning were more accurate. Deep learning is advantageous because of its scope of covering several latent variables enabling predictive accuracy. It is a dynamic model since it can adapt new data. Besides both verbal and visual inputs can be processed simultaneously. The improved level of accuracy validates the investment cost.

**Chinmay Kakatkar Martin Spann:** The study explores the use of anonymous and fragmented event-based tracking data (AFE) for marketing analytics. It becomes especially relevant in the current business world context because of the regulations on data privacy, and the various tracker-blocking methods being used by consumers. The importance of data pertaining to artefact-independent variables in AFE is reiterated. To validate this, an experiment with sensor enabled shelves that

capture the customer's interaction with displayed products is performed.

**Maria Petrescu, Anjala Krishen and Michael Bendixen:** The qualitative analysis of the authors purports to find the differences and similarities in research, organizations and business schools' perception of marketing analytics. A content analysis done using NVivo reveals specific areas or themes as under

- Data mining
- Metrics
- Big data in retail
- Digital analytics and social media
- Value addition through analytics
- Modelling for business decision

As far as analytics in practice is concerned data from 20 market research firms reveal the primary themes to be customers and business. Technical aspects and specialized software seem to be their area of interest.

In the academic field, though the top 25 global universities (U.S news,2018) in economics and business had a course on analytics the only one of the business schools analyzed had analytics mention in its website.

The techniques widely used include Excel, SPSS, R, quantitative strategic planning matrix (QSPM) decision model, Monte Carlo analysis, conjoint analysis regression etc.,

**Branda, A. F., Lala, V., & Gopalakrishna, P. analysis:** This study takes an organization perspective and attempts to understand the factors that will impact the orientation towards analytics. It considers both the cultural (Narver and Slater,1990)and the intelligence view(Kohli and Jaworksi's,1990) of marketing orientation. The generation of ideas were from experienced marketing analytics professionals,

CMO's and CAO's at the C level, marketing professionals with analytics knowledge and experience. A thematic analysis has been conducted on the responses received from 15 such experts and six major factors is identified. The issues that affect analytics implementation are either organizational or industry driven. The organizational barriers arise from lacuna in the leader, employee, communication or past practices. Cost, regulations, technical issues and competition determine the industry barriers. The identified factors that facilitate implementation are the top management are funding, top management commitment, director being analytics professional and willing to take risk, a suitable regulatory environment, utilization of the analytics output for implementing change and the organization being a leading one in the industry.

**Michel Wedel & P.K. Kannan analysis:** A critical review has been undertaken to trace the history of data analytics and its application in decision making. The development history is traced from application of analytics to observation to developing insights and finally to evaluate the marketing policies. The emergence of machine learning and the existing gap in that area is highlighted. The authors proceed on to elaborate on the types of data and the techniques available for qualitative and quantitative data analysis. The areas of application include optimization of marketing-mix spending, personalization and data security. For its implementation the study identifies suitable leadership, organization structure and the presence of efficient analyst as the fundamental requirements. Finally, the need for the academia to nurture both technical and strategic thinking skills in a balanced way is reiterated, received from 15 such experts and six major factors is identified.

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### III. SYNTHESIS

The similarities that emerge from the analysis is the focus on the rapid increase in the number of techniques and tools for data analysis that are appearing as soon as new formats of data flows in. But all the findings also hint upon the fact that there are not enough trained people to handle such techniques and extract the best that is there to offer. The practical inference would be a need to pause and take a broad comprehensive overview on the areas of need and derive aggregate solutions rather than tools that serve a temporary or specific need only. The need for integration, focus and capability building exercises is imminent now than ever before.

### IV. METHODOLOGY

Qualitative meta-synthesis aims to systematically analyze data from various qualitative studies. It involves the collection of qualitative data that addresses a specific question, (Ronald J. Chenail, Kamilah B. Thomas-Purcell, Sally St. George, Dan Wulff, 2018). Among the different methods of meta-synthesis, this study intends to use the Sadowski & Barroso method. The different

steps to be followed under this method are as follows

1. Formulating the review question
2. Conducting a systematic literature search
3. Screening and selecting appropriate research articles
4. Analysing and synthesizing qualitative findings
5. Maintaining quality control
6. Presenting findings

The review questions being decided, a systematic literature review was undertaken. Initially a search for the keyword “marketing analytics” was done in the top ten Scopus indexed marketing journals.

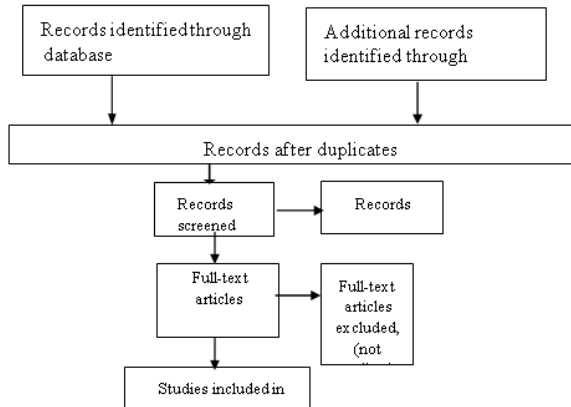
**Table-1: Phase I of article selection**

Name of the Journal	Marketing Analytics	Abstract or Title
Journal of Marketing	59	4
Industrial Marketing Management	977	51
Journal of Marketing Research	46	39
Journal of Retailing	293	5
Journal of Interactive Marketing	169	16
Journal of the Academy of Marketing Science	37	12
Journal of Supply Chain Management	956	3
Journal of World Business	154	6
Academy of Management Perspectives	885	167
Journal of International Marketing	16	1
Total	3592	304

Initially the top ten Scopus cited journals in marketing was searched for the words marketing analytics (Table 1). Then from among them those which had the words analytics in the abstract were eliminated. A

search in ABI Inform, EBCSO and google scholar was done which rendered 188 articles. Later following the process in the PRISMA flow diagram (Fig 1) 6 articles were chosen for review.

**Figure-1 PRISMA Flow Diagram**



The full text articles were screened based on the following checklist. **CASP CHECKLIST** (Critical Appraisal Skills Programme 2018).

- Was there a clear statement of the aims of the research?
  - Is a qualitative methodology appropriate? Is a qualitative methodology appropriate?
  - Was the recruitment strategy appropriate to the aims of the research?
  - Was the data collected in a way that addressed the research issue?
  - Has the relationship between researcher and participants been adequately considered?
  - Have ethical issues been taken into consideration? Was the data analysis sufficiently rigorous?
  - Is there a clear statement of findings? How valuable is the research?
- After screening the selected articles had the following characteristics (Table 2)

**Table-2: Characteristics of the Studies Reviewed in the Meta Synthesis**

Authors and Title	Year	Publisher	Focus	Methodology
Stephen L. Francea., Sanjoy Ghose. Marketing analytics: Methods, practice, implementation, and links to other fields	2019	Elsevier	Visualization, segmentation, and class prediction.	Integrated review
Glen Urban, Artem Timoshenko, Paramveer Dhillon, And John R. Hauser. Is Deep Learning a Game Changer for Marketing Analytics?	2020	MIT Sloan Management review	How deep learning fares in comparison to traditional methods	Purposive Sampling
Kakatkar, C, & Spann, M. Marketing analytics using anonymized and fragmented tracking data	2019	Elsevier	Extension of path data framework by Hui et al. (2009) to AFE data	Randomised field study (Experiment)
Iacobucci, D., Petrescu, M., Krishen, A., & Bendixen, M. (2019). The state of marketing analytics in research and practice.	2019	Springer	Analyze the current state of research in marketing analytics and assess the central study themes, topics of interest, findings, as well as methods of analysis employed.	Systematic Review

## V. CONCLUSION

There is an overload of data in the digital world today. But the returns from investment in analysis of such data is not significant. The lack of streamlining of research and its practices may be one of the causes. This study was an attempt to take stock of the qualitative studies that are present in the marketing analytics field and to find whether they focus on a common theme or are they different. The focus now seems to be more on the specifics such as the technologies and the areas of application. Several qualitative studies are available on data analytics in general. Quantitative studies on the effectiveness of a particular method of marketing analytics are also available. Qualitative studies are few and are similar in concentrating on the areas of application. The need is to take a different macro level perspective, consolidate and provide a comprehensive plan of data, tools and strategic implementation framework.

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