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The Importance of Big Data Analytics In Developing Marketing Strategies: Analytical Study of The Opinions of A Sample of Zain Mobile Communications Company Customers

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Abstract

This research examined the role of big data analytics in improving Zain's marketing plans and pointed out how big data helps segment customers into groups, create personalized marketing campaigns, and make decisions quickly. The research aims primarily to determine The Importance of Big Data Analytics in Developing Marketing Strategies Through its dimensions (identifying customer needs- targeting customers- developing marketing strategies- enhancing the customer experience- improving marketing return on investment- improving marketing decision-making- marketing success- understanding changes in consumer behaviour- big data and mining it), all of these dimensions were formulated in the form of research questions that embody the variables and dimensions in a general manner without going into the fine details and defining their dimensions. The research community consisted of 400 employees working at Zain Company. The sample was selected randomly from different job levels in the company. The sample size was 150 employees from within the research community. The questionnaire form was distributed to them randomly. After that, the forms were collected and entered into the computer. The findings showed that big data analytics is essential for understanding customer behaviour, improving marketing ROI, and encouraging new ideas in the telecom sector. However, issues such as data privacy concerns, high setup costs, and the need for experts were identified. The research concluded with smart suggestions for fixing these issues, such as investing in better tools and employee training and using predictive analytics to retain customers.

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Introduction

Big data analytics has emerged as a key to success for organizations in this fierce competition. The enhanced features of data volume, variety, and velocity have led to the development of advanced tools and techniques to extract insightful information for decision-making. Companies like Zain in the telecom sector face distinct challenges and unique opportunities when harnessing big data to develop more accurate marketing strategies, engage customers, and maintain a competitive edge (Chen, Chiang, & Storey, 2012; Davenport, 2014).

(Big Data) **It is a large and complex set of data e that is difficult to process using traditional tools du to its large size, variety, and**flow speed **.Big data includes information collected from multiple sources such asthe Internet , smart devices, and social networks, and**advanced technologies such as parallel analysis and artificial intelligence are required**to extract valuable insights from it. It is used in various fields to improve operations and make informed decisions to achieve growth and sustainability.** (Bag, S., Wood, L. C., Xu, L., Dhamija, P., & Kayikci, Y. (2020).80

2. Theoretical framework

The term "big data" first became popular in the late 1990s and early 2000s, but dealing with large amounts of data dates back much earlier. Here's a rough timeline of the history of big data:

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Sources: Brewis, C., Dibb, S., & Meadows, M. (2023). Leveraging Big Data for Strategic Marketing: a dynamic capabilities model for incumbent firms. Technological Forecasting and Social Change, 190, 122402. - Chintagunta, P., Hanssens, D. M., &

2.1. Big Data Analytics Overview

Big data analytics involves investigating large and complex amounts of data to identify patterns, correlations, and other previously hidden insights that will support effective decision-making. According to Chen et al. (2012), big data is characterized by three dimensions – volume, velocity, and variety, better known as the 3Vs.

These dimensions refer to the volume and rapid pace at which data is generated, the range of formats in which data is held within an organization, and the range of information that must be processed and analyzed to extract practical intelligence. In recent times, analytics has become a pivotal tool for organizations to gain competitive advantage – improving operations and personalizing marketing strategies. An example is IBM's Big Data Framework, which provides companies with scalable tools to manage and analyze data streams efficiently (Laney, 2001).

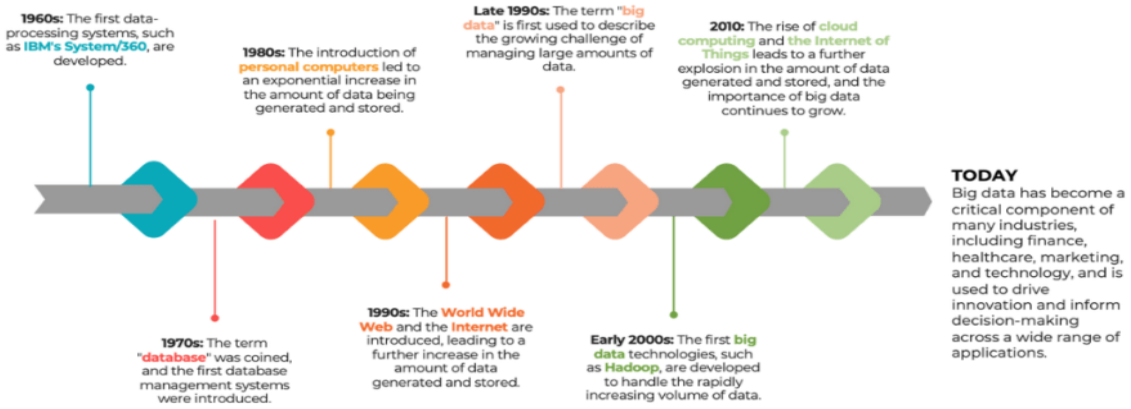
2.2. Big Data Analytics in Marketing

Marketing strategies have changed with the advent of big data analytics. Data-driven technologies have replaced mainly traditional marketing approaches—market segmentation based on historical data and intuition. McAfee and Brynjolfsson (2012) state that data-driven decision-making enhances organizational performance because big data analytics enables marketers to(:1232021:Idoine, C).

- Understanding consumer behaviour and preferences.
- Predicting future market trends and requirements.
- Improve pricing strategies and product positioning.
- Create personalized marketing campaigns that drive customer engagement.

The rise of machine learning and artificial intelligence further enriches big data analytics, providing marketers with predictive capabilities and automation of complex tasks (Davenport & Ronanki, 2018).

The role of big data analysis in marketing and the future of marketing in general can be shown as follows: Galetsi, P., Katsaliaki, K., & Kumar, S. (2020).



1. According to a report issued by DCI, The amount of massive data the world shares is estimated at 33Zetabyte. It will likely increase by 61% in 2025, reaching 175 zetabytes.
2. Publish the site Tech Jury Statistic It is estimated that the world will need 181 million years to download all the massive data it has collected from the Internet.
3. In 2017, the newspaper described The Economist Big Data, the world's most valuable resource, as a new alternative to oil.
4. According to Forbes Forbes, The big data market is expected to grow from $42 billion in 2018 to $45 billion in 2020.2018 AD to $103 billion in 2027 AD, at an annual growth rate of 10.48%.

All these statistics, if we put them together, we will find that the world is facing a torrent of big data that it

is trying to harness for its benefit. This data has not only affected the nature of business now but has formed a new type of industry called the big data industry. BIG Data Industry.

Big data in market research provides companies valuable information about consumer behaviour, preferences, and market trends. Market researchers use big data to analyze consumer data and understand their purchasing habits, preferences, and opinions, helping companies make informed decisions about product development, marketing, and sales strategies. Big data also helps identify potential market opportunities and challenges and understand the effectiveness of marketing campaigns. By leveraging advanced analytical techniques, such as machine learning and predictive analytics, market researchers can discover patterns and relationships in consumer data, which can help companies tailor their products and services to meet the needs and preferences of their target market.(El-Dalahmeh, Suleiman Mustafa (2020):99)

2.3. The role of big data analytics in communications marketing

In the telecom industry, competition is fierce, and customer loss is a considerable challenge; therefore, big data analysis comes into play. As Davenport (2014) points out, telecom companies use big data to:

- Analyze call detail records (CDRs) and customer interaction data to identify patterns and predict churn.
- Develop targeted marketing campaigns based on customer demographics, usage patterns, and preferences.
- Improve customer service by integrating data from different channels to deliver a seamless experience.

A study by Zolnowski et al. (2016) highlighted how customer analytics in the telecom industry can be leveraged to personalize apps' services, enhancing customer loyalty and thus proving the importance of big data in refining strategies related to customer experience.

2.4. Zain's adoption of big data analytics

Zain, one of the leading telecom companies in the Middle East and North Africa, has embraced big data analytics to improve its marketing plans. By adding advanced analytical tools, Zain aims to:

• Better understanding of customer behaviour.
• Identify essential customers and create loyalty programs for them.
• Predict when customers will leave and use retention strategies early.
• Optimize marketing budgets by focusing on powerful campaigns.

Zain has invested in AI-powered analytics, allowing the company to use predictive maintenance strategies that have reduced service outages and improved operational efficiency (Zain Group, 2021).

2.5. Challenges and Opportunities

Despite the significant gains that big data analytics offers, it also poses challenges:

• Concerns about data privacy and regulations, including the General Data Protection Regulation and others.
• High cost of implementing and maintaining analytics infrastructure.
• There is a need for human resources capable of interpreting complex data sets.

The opportunities for Zain are enormous, albeit with challenges. As Manika et al. (2011) argue, companies that harness the power of big data may find themselves with a quantum leap in competitive advantage. For Zain, the effective use of big data analytics could enhance customer satisfaction, increase market share, and ensure growth.

Cloud computing and edge analytics have also lowered entry barriers to big data entry, giving medium-sized companies a strategic advantage gained from data (Hashem et al., 2015).

Despite the many benefits of big data in marketing, this approach faces several challenges. Some significant big data challenges include Zhou, C., Su, F., Pei, T., Zhang, A., Du, Y., Luo, B., ... & Song, C. (2020).

- **The need for advanced data management systems:** One of the biggest challenges facing big data is the need for advanced data management systems. Traditional market research methods typically collect data in a centralized, organized format, making it easy to manage and analyze. However, with big data, data is often collected from a wide range of sources and in a variety of formats, making it more challenging to manage and analyze. As a result, companies must invest in advanced data management systems, such as data warehouses, data lakes, and cloud computing solutions, to effectively manage and analyze big data.

- **The need for skilled data scientists:** Another challenge posed by big data is the need for qualified data scientists. With big data, organizations have to analyze massive amounts of data using advanced techniques, such as machine learning and artificial intelligence, which require a high level of expertise. As a result, companies have to invest in training and development programs for their data scientists or partner with external firms with the expertise to harness the power of big data effectively.

- **Data privacy and security concerns:** With the increasing use of big data, there are concerns about data privacy and security. With big data, organizations have to collect and store massive amounts of personal data, which raises concerns about data privacy and security. As a result, companies need to implement strong security measures and comply with data privacy regulations, such as the General Data Protection Regulation (GDPR), to protect personal data.
- **Data quality and accuracy:** Another challenge facing big data is data quality and accuracy. With big data, organizations must rely on data from various sources, including social media, e-commerce transactions, and mobile devices, which may only occasionally be accurate or up-to-date. As a result, companies must validate and clean the data they collect to ensure its accuracy and quality.

3. Methodological aspect

3.1. Research problem.

Despite the apparent potential of big data analytics, it remains challenging for many organizations to implement effective strategies that harness its power. Zain, a leading telecommunications provider, is an example where failure to improve its big data practices led the company to miss opportunities in customer segmentation, marketing campaign personalization, and market trend forecasting (Kiron, Prentice & Ferguson 2014). This research will attempt to help Zain by exploring the role of big data analytics in developing its marketing strategies.

3.2. The importance of research

This research is significant because it helps connect what we learn about big data tools and how they are used in Zain's sales tasks. By seeing how big data tools can combine well with sales plans, this research provides good ideas that can make customers happier, use resources better, and encourage new ideas in the field of communications (McAfee & Brynjolfsson, 2012; Wamba et al., 2015).

3.3. Research objective

The main objective of this research is to evaluate the impact of big data analytics on the development of Zain's marketing strategies. Specifically, the research aims to:

1. Identify key areas where big data analytics can improve advertising performance.
2. Evaluating the challenges Zain faces in implementing big data solutions in the modern era.
3. Propose actionable indicators to improve the use of big data in Zain's advertising and publicity projects.

3.4. Hypotheses Search

The first main hypothesis:

This research hypothesizes that big data analytics would significantly improve Zain's marketing strategies by enabling better customer segmentation, targeted advertising, and real-time decision-making.

Second main hypothesis

There is a significant correlation at the 0.05 level between big data analysis and marketing strategy development in the organization under study.

3.5. Search Type

The research addresses the importance of big data analytics in Zain's marketing strategies using a quantitative research approach that allows for collecting numerical data to be analyzed to establish relationships, trends, and influences within the organization.

4. The practical aspect of the research

4.1. Research community and sample.

4.1.1. Research Community

The research community will include 400 Zain employees from various departments and job levels in marketing and data-related functions.

4.1.2Research sample.

- A sample of 150 employees will be selected from the research population to ensure representativeness.
- The sample includes participants from different job levels, ensuring a comprehensive and accurate representation of views across the organization.

4.2 Data collection tools.

1.Surveys

•It was mainly used to collect quantitative data.

•The questions were designed using a five-point Likert scale to measure participants' attitudes and opinions about the impact of big data analytics on Zain's marketing strategies.

•Improve data quality. The questionnaire is designed to cover all essential dimensions such as data use, decision making, and marketing effectiveness.

2.Validity test

Validity means that a questionnaire correctly measures what it is supposed to measure. Expert reviews and pilot testing are among the standard methods used to check validity, and they will be applied here to look at content and construct validity.

4.3. Reliability Test

Cronbach's alpha coefficient will be used to measure internal consistency and ensure the reliability of the questionnaire. The analysis was conducted using the SPSS software package**.**

Table 1: Cronbach's alpha coefficients

purpose	Cronbach's alpha (if item is omitted)
Question 1	0.853
Question No. 2	0.854
Question No. 3	0.855
Question No. 4	0.854
Question No. 5	0.856
Question 6	0.853
Question 7	0.855
Question 8	0.857
Question 9	0.852
Question No. 10	0.850

Source: Prepared by the researcher

Cronbach's alpha values were between 0.85 and 0.86, indicating high internal consistency and reliability. This demonstrated the questionnaire's ability to effectively measure the role of big data analytics in enhancing Zain's marketing strategies. It also helped provide information on how excluding individual items impacts overall reliability, which is useful for assessing the importance of each item.

4.4. Data analysis methods

The quantitative data collected through the questionnaires will be analyzed using SPSS software. The main statistical tools and methods include:

- Descriptive statistics (frequencies, means, and standard deviations) to summarize data trends.
- Inferential statistics to test hypotheses and evaluate relationships between big data analytics and marketing strategy development.
- Test reliability and assess validity to ensure robust conclusions are reached.

Using these methodologies, the research aims to provide reliable and actionable insights into how big data analytics contributes to Zain's marketing effectiveness.

5. Discussion and analysis of the results.

1. Demographic data

Table No. (1)Demographic data table

category	repetition	percentage
Age: Less than 20 years	10	6.67%
Age: 20 to 29 years	50	33.33%
Age: 30 to 39 years	40	26.67%
Age: 40 to 49 years	30	20.00%
Age: 50 years or older	20	13.33%
Gender: Male	80	53.33%
Gender: Female	70	46.67%
Educational level: less than high schoo	5	3.33%
Educational level: High school	25	16.67%
Educational level: Bachelor's degree	60	40.00%
Educational level: Master's	40	26.67%
Educational level: PhD	20	13.33%
Occupation: Student	15	10.00%
Occupation: Employee	85	56.67%
Occupation: Business Owner	30	20.00%
Occupation: Other	20	13.33%
Experience Level: No Experience	25	16.67%
Experience Level: Basic Experience	50	33.33%
Experience Level: Intermediate	45	30.00%
Experience Level: Highly Experienced	30	20.00%

Source: Prepared by the researcher

Discussion Demographics Results:

1. **Age group:**
   The most represented age group in the sample is 20-29 years (33.33%), followed by 30-39 years (26.67%). Younger individuals under 20 and older individuals over 50 are a minority, confirming the focus on youth and adults.

2. **The Gender:**
   The distribution is relatively balanced, with 53.33% males and 46.67% females, indicating a fair representation of opinions from both genders.

3. **Level Educational:**
   The majority of participants hold a bachelor's degree (40%), followed by those with a master's degree (26.67%), and only a small percentage (3.33%) have less than a high school education.

4. **Works:**
   Employees comprise the majority of participants (56.67%), while students and business owners comprise smaller proportions.

Experience:
A large portion of the sample has basic or intermediate experience in big data analytics (33.33% and 30%, respectively). Those with high experience represent 20%, showing a decent level of familiarity with

Table No. (2) Shows the results of the research sample's response to the questionnaire statements

a question	The middle	Standard deviation	percentage agreement
Big data helps to understand customer needs better.	4.61	1.18	88.49%
Big data is powering advertising campaigns.	4.30	1.04	89.44%
Big data leads to more accurate marketing strategies.	4.48	1.06	84.76%
Big data helps improve customer targeting.	4.40	0.86	72.69%
Big data enhances customer experience.	4.43	1.13	90.97%
Investing in big data increases marketing ROI.	4.05	0.97	71.65%
Big data helps in making better decisions.	4.08	0.72	79.87%
Big data helps understand changes in customer behaviour.	4.76	0.67	79.23%
Big data makes marketing strategies more innovative.	4.76	0.89	87.36%
Big data is essential to marketing success.	4.63	1.08	80.87%

Source: Prepared by the researcher

These results lead to the validity of the research hypothesis test. It is hypothesized that implementing big data analytics would significantly improve Zain's marketing strategies by enabling better customer segmentation, targeted advertising, and real-time decision-making.

The researcher can infer the following from the results of the analysis of Table (2):

Firstly:

1. **Average High Score:**
   Most questions had mean scores above 4.0, indicating substantial agreement with the data. The highest mean scores were for "Big data helps understand changes in customer behaviour" and "Big data makes marketing strategies more innovative" (both at 4.76).

2. **Standard deviation:**
   The standard deviation ranged from 0.67 to 1.18, indicating variability in responses. Responses to "Big data helps understand changes in customer behaviour" (standard deviation = 0.67) were relatively consistent. In contrast, questions such as "Big data helps better understand customer needs" (standard deviation = 1.18) showed more significant variability.

3. **Percentage Agreement:**
   High levels of agreement were observed, with the highest being "Big Data enhances customer experience" (90.97%) and "Big Data enhances advertising campaigns" (89.44%). These results reflect the perceived importance of Big Data in improving marketing outcomes.

4. **Key insights:**
   - Big data is crucial for understanding customer behaviour and innovative marketing strategies.
   - While all aspects of big data received positive feedback, areas such as return on investment (mean = 4.05, agreement = 71.65%) and decision-making (mean = 4.08, agreement = 79.87%) saw slightly

lower agreement, suggesting improvement in demonstrating tangible benefits.

- The researcher concluded that the average arithmetic mean, i.e. the general average of the research sample's answers, reached 2.471 compared to 1.066 as a standard deviation, with an agreement rate of 91.703. In light of this, the researcher concludes that there is a clear and strong correlation in the research sample's answers, which has reached a high percentage. The researcher confirms here the existence of strong correlations between the two variables, which confirms the validity of the second hypothesis of the research.

Conclusions

The research will have an idea about the most important conclusions, which are as follows:

1. **The Impact of Big Data Analytics on Marketing:** The research confirms that big data analytics significantly improves marketing strategies, enhancing customer segmentation, targeted advertising, and real-time decision-making. It is an essential tool for Zain's success in the competitive telecom market.
2. **Customer-focused strategies:** Big data analysis enables a deeper understanding of customer behaviour and preferences, allowing Zain to create personalized marketing campaigns that improve engagement and satisfaction.
3. **Operational efficiency:** Through predictive analytics and resource optimization, big data has proven to be a cost-effective way to increase the return on investment in marketing campaigns.
4. **Take Decisions Strategy:** The ability to examine large amounts of data in real-time allows Zain to make smart, fact-based choices, which is critical to changing market trends and customer desires.
5. **Challenges in implementation:** Despite Zain's many advantages, it faces many challenges, such as issues related to data privacy, the need for skilled employees, and the high cost of maintaining the significant data infrastructure.

The Recommendations

1. **Invest in advanced analytics tools:** Zain should continue investing in AI-based analytics platforms to enhance data processing capabilities and gain more accurate insights.
2. **Strengthening data privacy measures:** In response to privacy concerns, Zain must implement strong data governance policies and practice international standards in data protection.
3. **Training employees on big data analytics:** Regularly training employees on data analysis tools and methodologies will help them attempt to research and extract actionable insights.
4. **Focus on high-impact campaigns:** Through big data analytics, Zain can prioritize marketing campaigns that target high-value customers and effectively address identified pain points.
5. **Adopting predictive analytics for retention:** Using predictive models, Zain can proactively identify potential customers and formulate retention strategies.
6. **Collaboration with technology providers:** Partnering with leading big data and cloud computing technology providers can help Zain reduce operational costs and improve scalability.

These recommendations aim to improve Zain's use of big data analytics, ensuring long-term growth and competitive advantage in the telecom sector.

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