



Digital Transformation in Real Estate Management

Deniz Karahan

Deniz Karahan



Digital Transformation in Real Estate Management

1st. Edition

June 2023



© 2023

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically, the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically to be entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from the publisher. Permission for use may be obtained through the Rights Link at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use. While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, concerning the material contained herein.

Printed digitally.

June 2023, Switzerland

Content

- 1. Digital Transformation in Real Estate 9
- 2. Real Estate Management 13
- 3. Investment Management 16
- 4. Fund Management 20
- 5. Portfolio Management 26
- 6. Asset Management..... 31
- 7. Property Management 36
- 8. Facility Management 40
- 9. Data Management in Real Estate Portfolio 42
- 10. Big Data and Data Analytics..... 50
 - 10.1 Big Data Analytics Sector 52
 - 10.2 Why do we need big data analytics? 54
 - 10.3 Big Data 58
 - 10.4 Big data process..... 62
 - 10.5 Application programming interface 64
 - 10.6 Internet of Things 72
 - 10.7 Machine learning and IoT 73
 - 10.8 IoT Stream and Uncertainty 74
 - 10.9 Data Analytics Methods and Categories for IoT..... 74
 - 10.10 IoT architecture 78
 - 10.11 Cloud Computing..... 79
 - 10.12 Edge Computing 80
 - 10.13 Fog Computing 81
 - 10.14 Open Data..... 82
 - 10.15 Predictive Analytics 83
 - 10.16 Data Management Process 87
- 11. The Technologies and Methods 91
 - 11.1 3D Modelling 91
 - 11.2 D Printing..... 92
 - 11.3 5G and Wi-Fi 6 93
 - 11.4 Application Program Interfaces..... 93
 - 11.5 Artificial Intelligence..... 93
 - 11.6 Augmented Reality 94
 - 11.7 Advances in Multimedia Data 94
 - 11.8 Cloud Service Models 96

11.9 Software as a Service (SaaS).....	97
11.10 Platform as a Service (PaaS).....	97
11.11 Infrastructure as a Service (IaaS).....	98
11.12 Software Infrastructure as a Service (SaaS).....	98
11.13 BIM (Building Information Modeling).....	98
11.14 Blockchain.....	99
11.15 CAD.....	99
11.16 Chatbot.....	100
11.17 CRM.....	100
11.18 Digital Twin.....	101
11.19 Drones.....	101
11.20 Geolocation.....	104
11.21 Geospatial.....	105
11.22 GPS.....	106
11.23 Internet of Things.....	107
11.24 Location Analytics.....	111
11.25 Machine Learning.....	112
11.26 Mapping.....	112
11.27 Prefabrication.....	112
11.28 Modular Building.....	113
11.29 Property Identity.....	113
11.30 Robotics.....	114
11.31 Sensors.....	114
11.32 Smart Building.....	115
11.33 Automated House Visiting.....	116
11.34 Smart Contracts.....	118
11.35 Virtual Reality.....	119
11.36 Voice-activated Property Search.....	122
11.37 Digital Rental Platforms.....	123
11.38 Flat-Fee Models.....	125
11.39 The bidding process in the real estate market.....	126
12. Source & References.....	128
13. List of Figures & Tables.....	130
14. List of abbreviations.....	131
15. Index.....	132