Intelligent Solutions in the Management of Marketing

Petya Biolcheva[1*]

[1]UNWE Sciences, Industrial Business Department, 1700 Sofia, Student District, No.19 December 8th str, Bulgaria

Abstract. Marketing is among the sectors in which digitization and the application of intelligent tools based on artificial intelligence is at a high level. It is a known fact that in the short term, the widespread penetration of AI in the marketing of any business organization will be a guarantor of competitive advantage. The purpose of this paper is to outline the main directions for the development of intelligent marketing. To establish the path to intelligent marketing strategies and outline the directions of business organizations, to achieve high flexibility and adaptability to market requirements. Through analysis and synthesis of intelligent marketing innovations, the paper proposes a roadmap for implementing intelligent marketing (AIM) solutions suitable for individual types of business organizations. The conclusions drawn illustrate the competitive advantages for businesses based on intelligent marketing strategies.

1 Introduction

Marketing has a strategic importance for the development of any business. In order for marketing strategies to be successful, a thorough analysis of: consumer needs is required; competitive actions; market capacity; economic analyses; distribution channels [1]; efficiency and return on production and many other data. Marketing is a key management process that requires knowing customers, their purchase intentions, emotional states and all questions related to what, how and why [2]. Today's high dynamism of market conditions requires traditional marketing to exceed its capabilities and show a desire to improve relationships with customers [3]. To achieve this, flexibility is needed, based on in depth analysis of large amounts of user data [1]. The success of marketing strategies also depends on their correct results [4]. In recent years, we have witnessed the transformation of marketing. With the advent of intelligent systems handling various artificial intelligence (AI) tools, marketing practice takes on a new look. Intelligent marketing (AIM) has the ability to derive knowledge about consumer habits and consumption patterns [5]. The paradigm for the traditional asset-oriented management philosophy is being shifted and transformed into modern solutions based on artificial intelligence [6]. AIM uses AI to automate the management of massive amounts of data to create knowledge about the entire marketing mix [3]. AIM provides automated solutions based on multiple databases, user observations, trends

---

* Corresponding author: p.biolcheva@unwe.bg

[7] and is key to capturing high dynamics in marketing. Marketing with artificial intelligence supports organizations in strategic customer-related tasks: segmentation of key customers; maintenance and tracking to segmentation; sales management; customer satisfaction, etc. [8]. The purpose of this material is to show what are the main areas in which AIM is already showing its capabilities and what are the positive effects of this. The research question posed here is: what steps do SMEs need to go through in order to successfully implement AIM in their business? To answer this question below the paper proposes a methodology for introducing AIM into SMEs. It covers a series of steps from which managers can analyze everything that lies ahead and at the same time give them an indication of the key activities to follow.

2 Main directions in the development of intelligent marketing

It is no coincidence that the marketing sector is ranked among the main sectors, with the highest added value as a result of the use of artificial intelligence [9]. As such, it is a beneficiary of information technologies [1], their development and functionalities. The major merits in the development of marketing in recent years are based on the rapid development of AI, its cognitive mechanisms, the ability of machines to learn based on the received data [10], as well as the generation of knowledge from the analysis and conclusions obtained by AI [1]. According to Paschen and his team [11], big data, its quality volume, speed, variety, credibility and value are an increasingly valuable source for market knowledge. On their basis, business organizations discover, organize and share knowledge valuable for maintaining and developing effective marketing strategies [11] and competitiveness. Business organizations are already starting to apply facial recognition to define the mood of their customers and offer purchase recommendations for certain products [12]. Broadly speaking, among the main goals of AI is to attract and retain customers through intelligent digital marketing. It has the ability to direct users in a direction consistent with the organization's strategic goals [13]. Among the main services it handles are intuitive AI chatbots, intelligent email marketing, interactive web design and more. Some of the main advantages of AI marketing are presented in Fig.1.
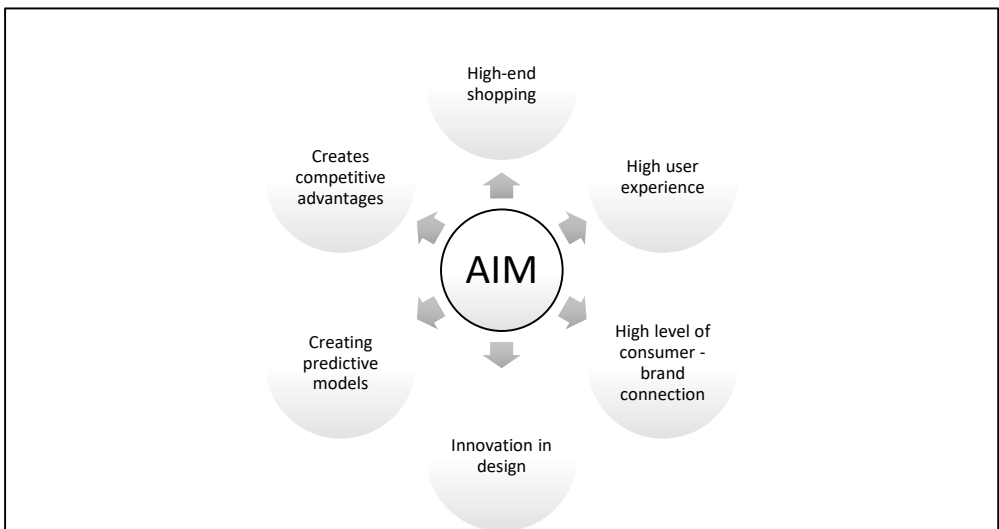

Fig. 1. Key Benefits of AI Marketing (AIM)

Examining the advantages of using AIM in greater depth, it should be noted that it is aimed at **increasing the level of convenience and speed of shopping**. AIM is based on improved processes related to 24/7 customer service, high quality search engines, security and speed of payments. [1] In this way, the processing of orders and their tracking to the customer is automated [2]. Within this functionality, AI processes orders in an intelligent way and maintains correspondence with users. As a result, customer satisfaction and loyalty to the respective business organization increases [7].

Another major area where AI's contributions stand out is related to improving the **user experience**. It is achieved through personalization in the approach of offering to the specific client. AIM reaches the individual customer level in all activities related to the organization's product or service [3]. User experience is defined as a complete experience that includes all aspects of the user's interaction with products or services and is related to the user's emotion and feelings in a daily environment [14]. The study of user experience includes indicators such as: emotions, perceptions, physical and psychological reactions. [15] The application of various artificial intelligence tools allows obtaining knowledge about user interaction in web systems, user satisfaction and is used to create various modifications [15] to increase the level of satisfaction. In this way, the right moment at which a product should be offered to an individual customer is also captured.

Next is the enhancement of the **consumer-brand connection**. AIs enhance marketing capabilities through a number of automated processes, such as notifying users and creating cognitive engagement, through customer service and recommendations [16]. Chatbots are also coming in big, providing personalized responses, content and recommendations to users in times of need. They are defined as conversational marketing and aim to improve communication [17] in real time. Real-time interactions between customers and AI improve request management and payout without any time constraints (24/7) and eliminate a waiting process [5].

Innovations in design. AI is redefining the way value is delivered to the customer and increasing the role of finding new solutions through design [1]. The generation of a digital image in real time; the creation of inspiring visualizations for company product advertisements; visual marketing content in social networks [18] are only part of the capabilities of AI.

Predictive marketing is also subject to AI. With the help of intelligent AI tools, development trends can be identified and predicted [19]. It guarantees the minimization of overspending in digital advertising [13]. Thanks to inputs collected from various places, such as social media accounts, online reviews and websites [13], demographic and psychographic data, AI can generate relevant analysis and inferences about future behaviour, focusing on influencing the "ideal customer". AIM uses knowledge to perform and automate marketing processes, including generating valuable market information [20]. Arguably, AI is transforming business organizations by making sales cycles shorter and more cost-effective [21].

The advantages of AIM listed here do not claim to be exhaustive, they mark major areas in which marketing is changing. They also show the great interconnectedness between them, i.e. the effect of their application is complex and aims to satisfy consumer needs and fulfil the strategic goals of business organizations in an intelligent way, adding high value to the overall competitiveness. This meets the new business challenges, namely the requirements for intelligent connected ecosystems [22].

A number of software solutions offering services such as: personal service and individual personalized messages to customers are already successfully offered on the market; preparation of individual predictive models; behavioural profiling; identifying the interest of individual customers; identify important topics for clients; edit content; tracks competitors' activities; monitor fingerprints [23].

3 Methodology for entering AIM into SMEs

Large business organizations have powerful teams, tools and the budget to introduce artificial intelligence in the integrated management of all business processes and achieve high competitive advantages. However, this is not the case with SMEs. This requires the integration of AI to be carried out in stages, through separate projects in the main business activities, and then to seek integration between them and an overall effect. Because of the importance of marketing to the overall effectiveness of the organization, it is appropriate that it be among the first areas in which intelligent transformation takes place. With the introduction of AIM, SMEs will have the opportunity to achieve effects such as: increased levels of customer satisfaction; better operational efficiency; more accurate analysis and forecasts. For clarity, here are the main steps that SMEs need to go through to implement AIM.

Different roadmaps for implementing AI in business management are available in the scientific literature and in practice. They are focused on exposing the various procedures that apply to software integration. Although expressed differently, they cover a key series of standardized steps. For example, according to Henderson, they can be systematized into: 1) determining the requirements that the system must meet, according to management's views; 2) conducting a feasibility analysis; 3) software infrastructure design; 4) management plan according to deadlines and alternative options; 5) system integration outlining the processes, applied methods and logistics; 6) implementation of the solution and training of employees; 7) system maintenance [24]. This material takes these steps as a basis. Although SMEs mainly apply ready-made software solutions for AIM, their certain specificities should be taken into account. Added value is sought here, by illustrating the way of implementing AIM, in SMEs, so that entrepreneurs have a clear idea of what lies ahead when introducing intelligent solutions in marketing management. The overall visualization of the methodology is presented schematically in a road map in Fig.2.
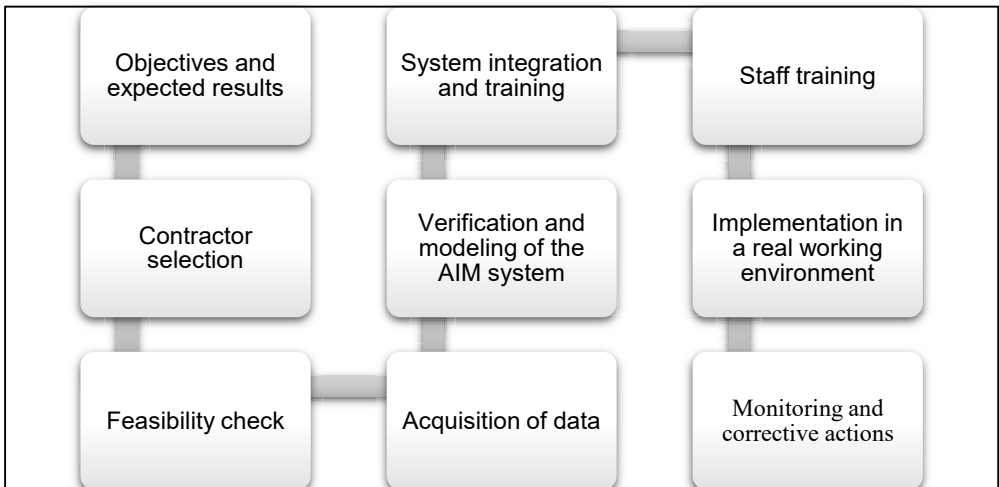

Fig. 2. Roadmap for implementing AIM in SMEs

For a better understanding of the roadmap methodology, its individual steps are explained below:

1. Clarify the organization's goals and expectations for AI. It is essential that SMEs are clear about exactly what they expect from AIM. For example, building and maintaining a positive company reputation; increasing the quality of the customer experience; predictive scheduling and dynamic pricing, etc.

2. Selection of a company to implement the intelligent system. For the most part, SMEs do not have a qualified team capable of implementing an AIM project. In this situation, you should turn to a specialized contractor company and ready-made intelligent solutions. In addition to researching the contractor's past projects, his available specialists, price and time conditions, it is also important to have good communication between the two organizations. In order to implement an effective AIM, it is essential to take into account the internal specifics of the SME and the expertise of the marketing and sales specialists in it. Another thing is to evaluate the project's capabilities from the point of view of technology and business processes before the actual implementation of artificial intelligence.

3. Feasibility check. At this stage, a study is carried out regarding the necessary budget (and access to funding sources in the absence of such), the time range for implementation, the implementation of various tests on the feasibility and viability of the idea [25]. Access to this information at this initial stage is important, both for the implementation of the project and its financial value, and for predicting its return and profitability.

4. Provision of data. Data and its quality are essential for the proper functioning of AIM. Data can be provided through various channels: expert opinion of specialists (martyrologists, salesmen, managers), the company's databases of past sales and customers (customer rating), marketing campaigns, advertisements, etc. In addition, data obtained through channels external to the company are important: such as recency, size, frequency and type of past purchases, current web browsing behaviour, psychographic and demographic characteristics, and interactions with the company. The provision of databases of listed marketing information is the input to machine learning and predictive algorithms through which analysis are conducted and intelligent conclusions are drawn to profile current or potential customers. This opens up opportunities to improve relationships with current and future customers [2]. It should be noted that training and development of AIM requires both historical data and continuously collected real-time data.

5. Verification of the selected AIM software methodology. AIM implementation methodology is specific to each individual SME and its expectations. Most often, verification is expressed in synchronizing, reconfiguring and modeling the various machine learning algorithms.

6. Integration of the AIM system with other available systems in SMEs. In the presence of other intelligent systems and/or basic software products for managing business processes (for example CRM), it is necessary to carry out an integration providing common functionality and added value. Based on the verification of the obtained primary results of the integration, optimization and modification of parameters and algorithms in AIM is often required, i.e. within this step, the training of the system is carried out with tests for proper functioning.

7. Training of personnel - The employees/operators who will work with the AIM system are trained by the company supplying the product. Training is aimed at familiarizing users with the system, as well as diversifying individual groups, according to their rights and obligations. At the end of the process, the required result is the problem-free functioning of the system, as well as at a higher level - administrator, adequate understanding and operation with the settings and training algorithms of AIM.

8. Implementation in a real working environment. After checking the effectiveness of AIM in the specific SME, it is moved to its actual operation. It should be noted here that the learning process of AI algorithms is continuous and evolving. The results of the autonomy and of the correct operation of the system increase over time. With the constant addition of information from current events, the work of the entire system improves itself [26].

9. Monitoring and Corrective Actions. Although this system is intelligent, it needs monitoring and, if necessary, external intervention. Monitoring the overall process and all the steps through which the stages of the roadmap go is important from the point of view of

the correct implementation and functioning in accordance with the specifics of the given SME. Strict compliance with the individual activities and stages largely determines the achievement of the intended results [26].

4 Discussion

There are still SMEs that have a number of inhibitions regarding the application of intelligent systems. On the one hand, they set up barriers related to the supposed high price of the product. On the other hand, they are not sure about the solutions offered by artificial intelligence. On the other hand, they think that the human factor will be replaced by machines. These and a number of other inhibitions create psychological barriers in SME owners and managers, who are already losing competitive advantages. The truth is that implementing AIM requires financial resources and time. Bearing in mind that here the intelligent software solutions are to a large extent ready-made products, their price is far lower than those of large companies that are built only for them. This provides easy access to finance for SME owners and makes them a preferred investment. Regarding the lead time, it should be noted that it does not affect the lead time of the smart product as much as the provision of quality data. Although databases with various marketing indicators are already on the market, they are not sufficient. Ideally, an SME has the necessary customer databases, but it often turns out that these databases are incomplete or do not cover all the required parameters. In such a situation, more time is needed to provide the critical minimum of quality data for training the AI algorithms.

Although there are sometimes initial difficulties it can be argued that the added value of using AIM far outweighs them. In the short term, SME managers can improve their marketing and identify new key areas to target [5]. AIM based SMEs are able to segment the market to increase sales, win new customers and make existing customers loyal and highly satisfied. This affects the building and retention of the positive reputation of the particular company. On this basis, it can be concluded that within the next five years, the introduction and use of AIM will be key. It should not be forgotten that AI marketing is still in its infancy, and its positive effect will increase as the effectiveness of its self-learning and its impact with the external environment increase. The effect would be further enhanced if intelligent marketing is integrated into a common intelligent system covering all the main business processes and management activities in SMEs.

5 Conclusion

The topic related to the application of artificial intelligence in business management has increased interest from both science and practice. According to the author of the paper, this interest is just gaining popularity, and in the coming years it will be a major prerequisite for analysis and development. This article touches on the key effect of smart marketing. With its help, SME owners and managers can follow all the main required steps in the transformation of traditional marketing to AIM. Also outlined here are key benefits that can influence the decision to move towards intelligent marketing management. The presented AIM implementation roadmap can be useful for SME entrepreneurs who are about to implement smart marketing solutions. The author's efforts in the scientific work on the transition to intelligent management and a stable Industry 4.0 direct future work to the analysis of the main applications of artificial intelligence in any sphere of business management. The goal is to offer an intelligent integrated management approach, guaranteeing high competitiveness of business organizations.

References

1. K. Jarek, G. Mazurek, Cent. Eur. Bus. Rev. **8,** 2, 46-55 (2019)
2. T. Abrell, M. Pihlajamaa, L. Kanto, J. Brocke, F. Uebernickel, Information & Management **53**, 324-335 (2016)
3. K. Yau, N. Saad, Y. Chong, Appl. Sci. **11,** 8562 (2021)
4. Y. Duan, J. Edwards, Y. Dwivedi, Int. J. Inf. Manag.**48**, 63–71. (2019)
5. S. Vishnoi, T. Bagga, A. Sharma, S. Wani, Indian Journal of Eco Artificial Intelligence nomics & Business, Vo Enabled Marketing S l. **17**, 4, 67-177 (2018)
6. B. Beck, Forbes, (2018), [Online] www.forbes.com: https://www.forbes.com/
7. V. Avinash, The role of ai in predictive marketing using digital consumer data, UGC Care Group I Journal **11**, 06 (2021)
8. W. Fowler, Inside Big Data, (2018), [Online] www.insidebigdata.com: https://insidebigdata.com/2018/08/31/ai-taking-lead-generation-nearest-future/
9. MIT Technology Review Insights, Professional services firms see huge potential in machine learning, (2018), [Online] www.technologyreview.com/s/612374/professional-servicesfirms-see-huge-potential-in-machine-learning/
10. A. Lieto, M. Bhatt, A. Oltramari, D. Vernon, Cognitive Systems Research **48**, 1-3 (2018)
11. J. Paschen, J. Kietzmann, T Kietzmann, J. Bus. Ind. Mark.n**34**, 7, 1410-1419 (2019)
12. P. Jain, K. Aggarwal, Res. J. Eng. Technol. **7**, 7, 3964-3976 (2020)
13. A. Haleem, M. Javaid, M. Qadri, R. Singh, R., Suman, IJIN **3**, 119-132, (2022)
14. B. Yang, L. Wei, Z. Pu, Front. Psychol. **11**, 595374 (2020)
15. K. Souza, M. Seruffo, H. De Mello, D. Souza, M. Vellasco, IEEE Access **7**, 96506 - 96515 (2019)
16. T. Davenport, R. Ronanki, Artificial intelligence for the real world, Harvard Business Review, 108-116 (2018)
17. J. Lin, L. Wu, Computers in Human Behavior **140**, 107488 (2023)
18. Create unique AI generated images in 1-click, [Online] https://www.art-fy.net/?gclid=Cj0KCQjwjryjBhD0ARIsAMLvnF_MXKWDbxlviR5KfoiXqYobCC6V zMSgyhP_gy5K1_uutI_YBbppMWIaAl8ZEALw_wcB
19. D. Dumitriu, M. Popescu, Procedia Manuf. **46**, 630-636 (2020)
20. S. Verma, R. Sharma, S, Deb, D. Maitra, Int. J. Inf. Manag. Data Insights, **1**, 1, 100002 (2021)
21. Kak izkustveniyat intelekt uspeshno se prilaga v marketinga?, [Online] https://enterprise.bg/blog-news/ai-marketing
22. J. Saura, JIK **6**, 2, 92–102 (2021)
23. 10 "Best" AI Marketing Tools, (2023), [Online] https://www.unite.ai/10-best-ai-marketing-tools/
24. C. Henderson, System Integration Process-7 Steps to Follow, Anyconnector, (2020), [Online] https://anyconnector.com/en/system-integration/system-integration-process.html
25. Ph. Cotelle, T. Dias, J. Florian, O. Gunes, ets., Artificial Intelligence Applied to Risk Management, FERMA Perspectives 03, 21 (2019)

26. P. Biolcheva, E. Valchev, V. Bozev, D. Beleliev, S. Ivanov, Integratsiya na riska pri upravlenieto na biznes protsesite v organizatsiite (Izdatelsski kompleks UNSS, Sofia, 2022), https://www.ceeol.com/search/book-detail?id=1070576