



COMPOSITIONAL MODELING OF ASSESSMENT OF THE IMPACT OF DIGITAL STRATEGY

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Abstract. Information technology (IT) initiates innovation in the shopping and entertainment center (SEC). To take advantage of Industry 4.0 requires a digital strategy and its evaluation system. We offer a conceptual framework that will support TS Property management in implementing a digital strategy, thereby allowing updating its business model. This document describes in detail a model for assessing the impact of a digital strategy on management efficiency based on two SECs in the Republic of Kazakhstan, using TS Online and SmartPlaza control systems, the system architecture and a decision-making model for SEC stakeholders. The centralized control system TS Online SEC is designed to coordinate all enterprise systems, management subsystems and BI analytics. The main components of a central control system are process control, synchronization, subsystem interactions and network system.

Key words: centralized control system; digital strategy; management efficiency.

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JEL: C34, M15, Z21

1. Introduction

Scientific research shows that coordination of business and IT is a key element of successful digital projects (Frank, 2014; Mussapirov et al, 2019; Dyachenko et al, 2018; Jarmusevica et al., 2019; Petrova et al, 2018; Štefko et al., 2019; Baklanova et al. 2020; Barmuta et al., 2020; Aujirapongpan et al., 2020; Vasilev et al., 2020).

There is no doubt that digital infrastructures, properly implemented, can play a critical role in promoting customer engagement, increasing company loyalty and economic competitiveness.

The purpose of this study is to understand the role of a digital strategy using IT solutions based on the TS Online centralized control system and the SmartPlaza application in building business processes of TS Property management company, increasing sales through in-depth marketing analysis of the SEC stakeholders, document flow, making tactical and operational decisions in the management of SEC. We identified the main tasks as the following: to study how the synchronization of TS Online and SmartPlaza systems helps to increase the efficiency of SEC management, improves omnichannel marketing, as well as to study how the use of loyalty programs by means of the SmartPlaza mobile application leads to increased sales.

Due to insufficient constant pressure on profitability, TS Property management focused on actively tracking its data on rental payments, customer relationship system and document flow, and marketing of the SEC in order to improve sales by effectively targeting customer acquisition (Figure 1).

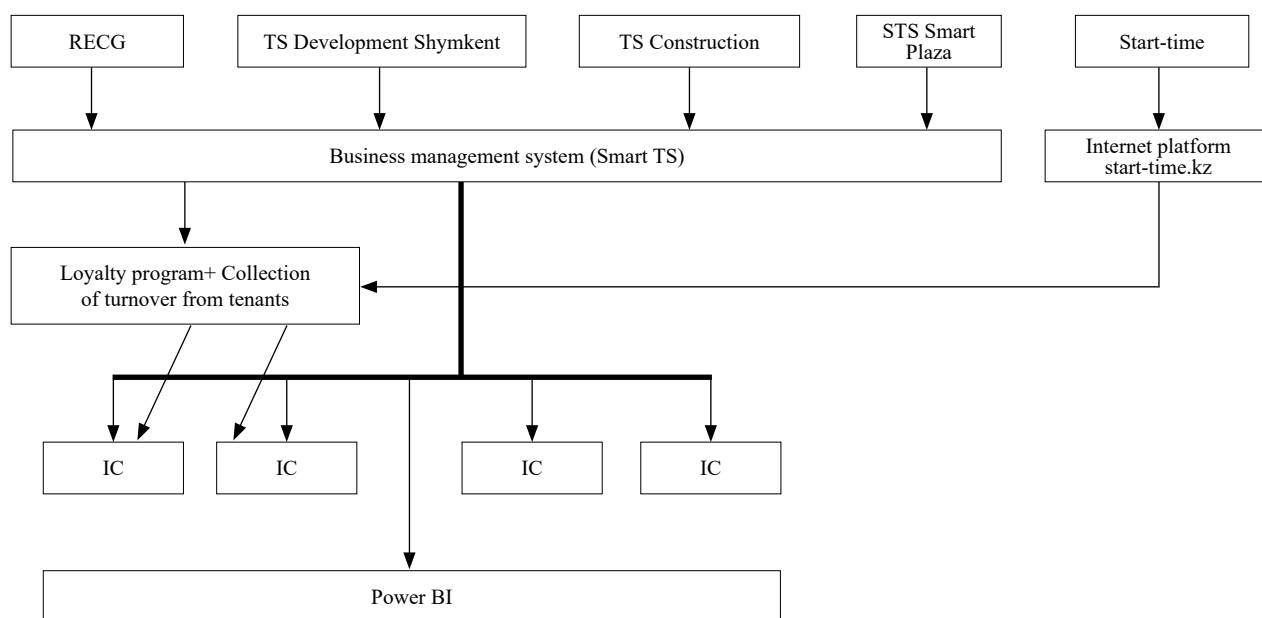


Figure 1. TS Property management business management scheme

Source: compiled by the authors

Overall, this study develops the theory of how to increase efficacy from digital technologies, all other marketing opportunities being equal, and how to facilitate the practice of dynamic decision making, based on qualitative analysis of the Smart Plaza application. The next chapter of the document summarizes the relevant works of digital strategies, co-active SDL creation, and customer engagement in decision making. Next, we describe the conceptual basis of the digital strategy, on the basis of which statistical calculations and the increase in the D-indicator of income of TS Property management per 1 purchase in the SEC are presented. We set out the methodology of this research - a qualitative analysis of Smart Palaza selected from two SEC. It concludes with a summary of the findings, including a discussion of the effects on the practice of increasing revenue from digital activities of SEC management.

2. Digital strategy of TS Property management

Digital strategies are a key element in IT management, while maturity models are needed to control the progress of digital strategies, they are used to assess situations as they are, to guide improvement attempts and monitor progress (Korachi, Bounabat, 2019). The digitalization strategy represents the integral intention of the company to optimize all actions associated with the digital transformation process to create competitive advantage through new technologies and methods for optimizing products, processes and business models (Pfenning & Eigner, 2020). The periodic introduction of new digital technologies and the expansion of the range of online offers and interactions with mobile devices significantly change the structure of the company; for many companies, this implies completely new operating processes (Hübner et al. 2015; Cant et al., 2020).

On the other hand, digitalization destroys economic rents, decomposes a profitable product or service, giving the consumer the freedom to buy only what he needs (Butkovskaya, Sumarokova, 2019; Lincenyi, Michal, 2020).

The relevance of applications for lease in the SEC moved beyond the focus on the construction of new spaces of TS Property management as a model for providing services to tenants. The new digital strategy highlighted the importance of the omnichannel sector of interaction with partners, modern relationship marketing with the integration of Industry 4.0 elements.

The SmartPlaza mobile application provides partners with a service that improves the quality and efficiency of marketing campaigns, strengthens brand and enables them to receive feedback from users, measure the index of determining consumer loyalty to a product or company, digitize all data and link offline sales with online services (omnichannel). Smart Plaza Market Place allows you to remove all burdens from entrepreneurs by

providing convenient services and functions, which makes it possible to make shopping and leisure more comfortable, exciting and profitable, as well as online order booking and online pay tool. SmartPlaza uses iBeacon technology, which operates on the basis of Bluetooth beacons, to provide visitors with spot advertising, expertise technology of work with Bluetooth and Wi-Fi network to collect long-term contact data among app users and contact tracing of infected people (COVID19), as well as technological development in the areas of Power BI and machine learning. Market Place implies the development of the following main areas: 1) SP Data is a solution that allows automating the process of reconciliation of tenant sales data with turnover through Smart Plaza. Interaction with a partner at the level of receipts and balances of goods, dimensional grid, nomenclature characteristics (color, model). Consolidation of data in a single source, automatic distribution of data to accounting departments of related departments. Automation of analytics for the marketing department of both the partner and the company; 2) Integration, direction from a general-purpose “entry point” into the database, for the independent formation of content and balances from the partner’s side based on existing online stores; 3) A personal account, which involves manual processing of content by a partner, is provided for partners who do not have their own online stores. Full implementation of the cash register system for tenants.

3. Engagement and SDL in the SEC loyalty program

Engagement marketing is the company’s purposeful efforts to motivate, empower and measure customer voluntary contributions to its marketing functions beyond the primary economic operation (Harmeling et al., 2017). At the present stage, it is being transformed into transactional, relational, network-centric and service logic. Co-active service creation has received a lot of attention in Service Dominant Logic (SDL), which states that value is generated through the interaction between a service provider and a customer. Synchronous occurrences of events, unplanned permanent changes, move in parallel with SDL, since SDL implies a high level of uncertainty. The SEC loyalty program supports customer engagement level through enhanced intelligence technology (Matia et al., 1997), using GPS technology, IoT (things), image recognition and processing technology, machine learning techniques and semantic search, BigData (Feng et al., 2020), RFID technology that significantly expands the supply chain. In our observation, customer engagement of the SEC falls under the emergence paradigm concept (Van Kemenade, Hardjono, 2019). The key conclusion arising from the integral consideration of the SEC clients is the recognition of the client’s logic. Dominant customer logic emphasizes the customer’s primary role in the business. In contrast, customer engagement refers to the emotional attachment that customers experience during repetitive and ongoing interactions, come through satisfaction, loyalty, and admiration of the brand (Brodie et al., 2011). In this way, SDL is different from approaches oriented to vendor’s point of view. According to the SDL, the key moment is not of collecting data about the needs, wants and expectations of customers in relation to offers, but rather of understanding how customers as actors shape their lives and use offers according to their logic.

On the other hand, such tools as task-manager, CRM, which help to increase the efficiency of the SEC own staff. As an IT solution is critical to predicting CRM practices and their impact on customer satisfaction and retention (El-Gohary et al, 2013).

4. Expectations anticipation and Emergence paradigm

Ideal expectations are based in part on both experience and the client’s desire. Revealing customer preferences is the main goal of priority marketing and its approach differs from traditional segmentation. Expectation theory says that the perceived attractiveness of an option is determined by beliefs about the desirability of the expected outcome based on a consumer experience, and that consumers purposefully select alternatives to create value. There are ideal expectations, predictable and minimum expectations (Islamgaleyev, 2020).

Emergence theory is a useful theoretical base for understanding the motivation of client engagement in company-initiated social media activities (Van Kemenade, Hardjono, 2019). Emergence is seen as synchronous occurrences of events, unplanned permanent changes, move in parallel with SDL, since SDL implies a high level of uncertainty. The SEC strategy, within the wide differentiation of products, encourages customers to make constant changes in decisions of purchasing and visits to SEC zones. In this regard, it is necessary to offer a compromise from outside, which we interpret as a Positive Compromise.

Nowadays, artificial intelligence in marketing tends to be implemented at the operational level, usually as one-off initiatives or events, and 24/7 customer service, hyper-personalized solutions, more convenient shopping or avoiding the wrong choice all contribute to a new dimension in areas of anticipation of events (Devang et al., 2019). Considering this, AI assumes an individual level of personalization, and mass and segment personalization is taking a back seat.

5. Making decisions by the SEC stakeholders.

This study addresses the design of the decision-making process for TS Property management stakeholders in the SEC, which simulate the impact of digital decisions through the process of anticipating expectations on emergence and motivating potential customers to take action. The model is based on an illustrated model of decision making in digital games (Czauderna, Budke, 2020), who in this study examined how digital strategies and control games facilitate the practice of dynamic decision making from an educational perspective. Anticipating expectations is an attempt to maintain awareness of these uncontrollable influences of emergence and to include such efforts that can be translated and managed by controlled expectations. Trust is critical to any long term business relationship. This is important wherever there is risk, uncertainty, because it reduces risk. In this aspect, customer actions fall under the unified theory of user acceptance of information technology (Venkatesh et.al., 2003), where the perceived usefulness and perceived ease of use, as well as trust in the service provider, influences over the decision making by the application users.

In Figure 2, we present the conceptual framework for the digital strategy of TS Property management, which is based on three main concepts: 1) Anticipation of expectations; 2) Digital strategy; 3) Initiated engagement loop. While anticipating expectations and digital mediation relate exclusively to the internal digital control system, that is, to the TS Online and SmartPlaza decision-making scheme, the initiated engagement loop simulates the circular interaction between SmartPlaza and the user, including the practice of taking actions by a user.

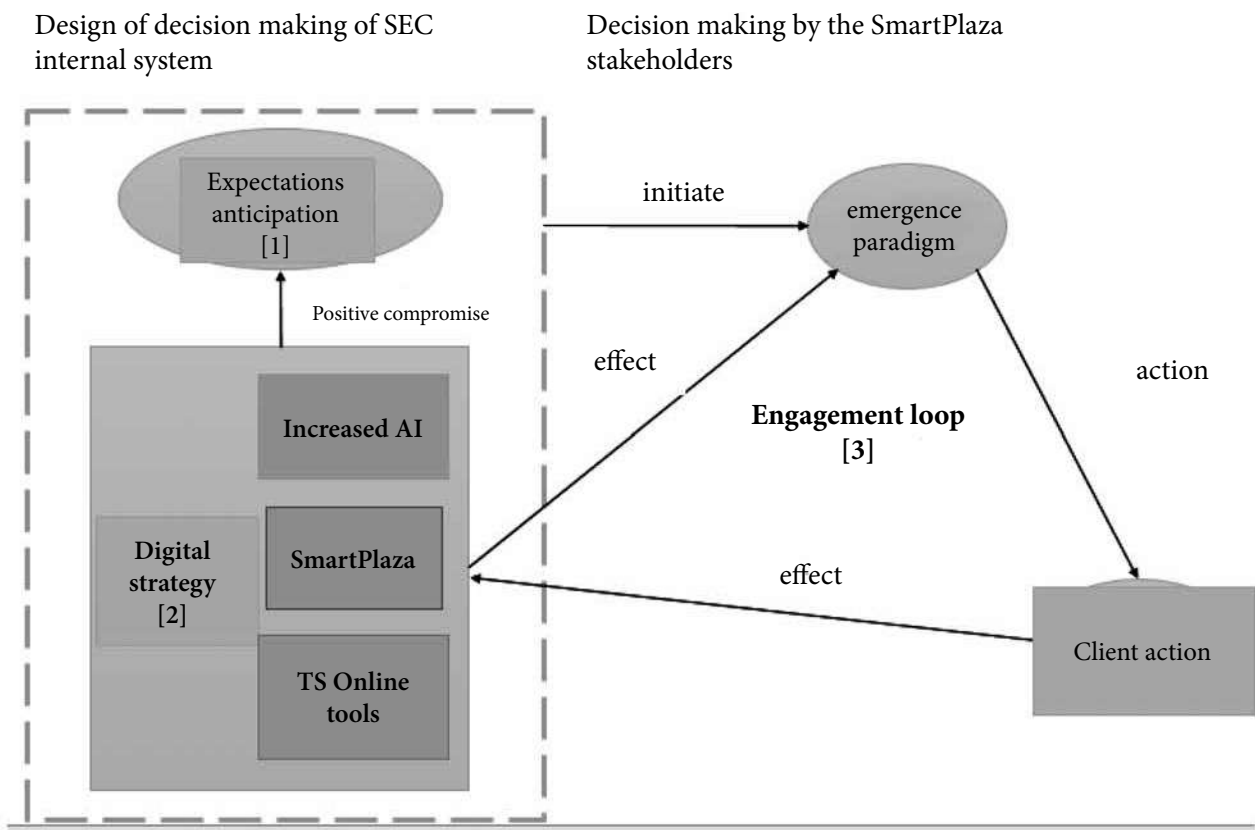


Fig. 2. Conceptual basis of digital strategy of TS Property management.

Source: compiled by the authors

Expectation management should focus on all verticals and processes, operational, administrative and customer preference measurement through priority marketing.

In addition, we assume that the digital strategy expressed in TS Online tools and BI analytics through the SmartPlaza online application has a direct relationship with the number of participants. The application supports the company in obtaining a constant, timely and reliable data flow, offering analytics to the current needs of the SEC customers, reducing communication barriers. In connection with which we put forward the following hypothesis;

H1: The use of a digital strategy has a positive correlation with the number of participants - retail outlets of the SEC and increases the efficiency of management.

Actually, according to recent estimates, 66% to 84% of digital projects fail (Barry et.al, 2016), causing companies to incur project losses. Therefore, when formulating a digital strategy, it is necessary to identify the elements that need to be changed and aligned. In our case, a result of the growth in data volumes, the connection speed of all IT systems is a key factor in measuring customer sentiments and motivation for actions controlled by the SEC. Therefore, our second hypothesis is formulated as follows:

H2: The effectiveness of digital strategy has a positive correlation with the speed of IT systems work and increases customer engagement.

However, ensuring the involvement of the IT system is not always an easy task, the reasons for which companies suffer losses are different. For example, Nike + products include sensors that collect activity data and sync it via the web platform. Thus, clients can receive feedback and suggestions to improve their physical performance, as well as the opportunity to access a virtual community of friends, athletes and coaches (Correani et al., 2020). However, while the digital transformation project was promising, Nike withdraws Nike + products. Customer participation in SmartPlaza applications requires a certain level of information disclosure, monitoring online recommendations, hybrid content filtering, the ability to adapt to a trading environment in which a convenient setting of channel usage gives customers greater flexibility, possibly stimulating more active shopping behavior. In this regard, we assume that:

H3: The number of downloads has a positive correlation with the cost of maintaining a centralized IT solution system.

H4: The number of downloads has a significant correlation with the response time and the quality of services provided.

6. Methodology

The prepared model is based on the data of the annual analysis of the performance indicators of the employees of the TS Property management group of companies of two large SEC- Dostyk Plaza, Shymkent Plaza, data from 420 employees of the administrative staff, including 15 employees who take part in the management of the group of companies and data from 150 retail outlets located on the territory of two SEC, 78,000 registrations in SmartPlaza and 155 (out of 242) partners of accrued bonuses for payment.

The collected data were analyzed using the Pearson correlation coefficient calculation as the main tool.

7. Results and Discussion

The analysis revealed the following correlations:

Dij- The indicator of income per purchase in the i-th outlet in the j-th

The SEC has a correlation with the frequency of use of the SmartPlaza IT solution system (Chj) with a coefficient of 0.896 and with the number of use by employees (DLj) with a coefficient of 0.354.

Chj- The frequency of use of the IT SmartPlaza system in the j-th SEC has a positive correlation with the number of participants - outlets (Nj) with a coefficient of 0.965, with the speed of the SmartPlaza IT solution work (Vj) with a coefficient of 0.989, with the number of operating services of a separate SEC (NSj) with a coefficient of 0.458 and a negative correlation with the SmartPlaza IT solution downtime (TOj) with a coefficient of 0.892. The number of downloads (DLj) showed a positive correlation with the costs of maintaining the SmartPlaza (SRj) IT solution system in thousand tenge with coefficient of 0.25 and a significant correlation with the coefficient of response time from operators per 1 question (TOj) * quality of services provided (average rating of the operator's work) (AOj) = 0.9978, as well as with the number of participants - outlets (Nj) with a coefficient of 0.689. Thus, the model for assessing the impact of a digital strategy can be expressed by a system of equations:

$$\Delta D_{ij} = 0.896 \Delta Ch_j + 0.354 \Delta DL_j$$

$$\Delta Ch_j = 0.965 \Delta N_j + 0.989 \Delta V_j + 0.458 \Delta NS_j - 0.892 \Delta TO_j \quad (1)$$

$$\Delta DL_j = 0.25 \Delta SR_j + 0.9978 \Delta TO_j * \Delta AO_j + 0.689 \Delta N_j.$$

Here is the confirmation of this model using the consistent application of regression.

At the first stage, we will form the parameters for estimating the model of the number of downloads (DLj) based on the entire analyzed base in each of the SEC. Hereinafter, the calculations were carried out on the basis of our own data using MS Excel software using the built-in regression tool and with a confidence level of 95%. At the first stage, we analyzed a sample of the number of IT solutions used per month (DLj) based on the values of maintenance costs (SRj).

Table 1. Amounts of IT solution use

j		Coefficients	The resulting dependent variable expression
SEC 1	Y-intersection	184,25	
	SR1	0,21458	DL1 = 184,25 +0,21458 SR1
SEC 2	Y- intersection	81,35	
	SR2	0,2689	DL2 = 81,35+0,2689 SR2
SEC 3	Y- intersection	219,47	
	SR3	0,2478	DL3= 219,47+0,2478SR3
SEC 4	Y- intersection	98,45	
	SR4	0,2678	DL4 = 98,45+0,2678SR4

Source: compiled by the authors

In as much as the fact that the SEC are equivalent, we will form an average estimate for the final expression as:

$$\Delta DL_j = 0.24977 \Delta SR_j + \alpha, \quad (2)$$

where α is the indicator of the model estimation error, depending on other parameters of the model.

Next, we will replace the data on the maintenance of the IT solution with a constant calculated by the inverse formula 2, after which, from the model that appears, we will conduct a regression analysis for the aggregated response time from operators per 1 question per minute.

(TOj) * is quality of services provided (average score of the operator’s work), where the quality of services is estimated from - to 10 (AOj):

Table 2. Regression analysis for the response time from operators

j		Coefficients	The resulting dependent variable expression
SEC 1	Y- intersection	67,45	
	TO1*AO1	0,9978	DL1 = 67,45+0,9978TO1*AO1
SEC 2	Y- intersection	45,987	
	TO2*AO2	0,9785	DL2 = 45,987+0,9785TO2*AO2
SEC 3	Y- intersection	234,87	
	TO3*AO3	0,9862	DL3 = 234,87+0,9862TO3*AO3
SEC 4	Y- intersection	86,78	
	TO4*AO4	1,0015	DL4 = 86,78+1,0015TO4*AO4

Source: compiled by the authors

In as much as the fact that the SECs are equivalent, we will form an average estimate for the final expression as:

$$\Delta DL_j = 0.24977\Delta SR_j + 0.991075\Delta TO_j * \Delta AO_j + \beta. (3)$$

where β is the indicator of the model estimation error, depending on other parameters of the model - Nj. Then, after replacing the expressions of the indicators SRj and $\Delta TO_j * \Delta AO_j$ in the data used to calculate the values according to expressions 2 and 3, we will reveal the dependence of the number of downloads on the number of outlets (Nj).

Table 3. Dependence of the number of downloads on the number of outlets

j		Coefficients	The resulting dependent variable expression
SEC 1	Y- intersection	162,873	
	N1	0,754	DL1 = 162,873+0,754 N1
SEC 2	Y- intersection	23,114	
	N2	0,737	DL2 = 23,114+0,737N2
SEC 3	Y- intersection	75,163	
	N3	0,6545	DL3 = 75,163+0,6545N3
SEC 4	Y- intersection	34,6112	
	N4	0,6537	DL4 = 34,6112+0,6537 T N4

Source: compiled by the authors

In as much as the fact that the SECs are equivalent, we will form an average estimate for the final expression as:

$$\Delta DL_j = 0.24977\Delta SR_j + 0.991075\Delta TO_j * \Delta AO_j + 0.6998\Delta N_j. (4)$$

Thus, we obtain a refined model for assessing the amount of use to form a model for assessing the impact of a digital strategy.

$$\Delta Ch_j = 0.9548 \Delta N_j + 0.9824 \Delta V_j + 0.4612 \Delta NS_j - 0.8897 \Delta TO_j (5)$$

In a similar way, the information on Chj was analyzed and refined - Frequency of use of the IT solution And the assessment of the final model: $\Delta Dij = 0.912 \Delta Ch_j + 0.3521 \Delta DL_j (6)$

where i is the number of the outlet for which the influence of these indicators was revealed, while averaging

over the median was carried out to reflect the formula, in order to obtain more reliable information, taking into account the number of outlets in the jm SEC due to the fact that some outlets are represented in several SECs.

Thus, the refined module will look like this:

$$\Delta D_{ij} = \Delta D_{ij} = 0.912 \Delta Ch_j + 0.3521 \Delta DL_j$$

$$\Delta Ch_j = \Delta Ch_j = 0.9548 \Delta N_j + 0.9824 \Delta V_j + 0.4612 \Delta NS_j - 0.8897 \Delta TO_j \quad (7)$$

$$\Delta DL_j = \Delta DL_j = 0.24977 \Delta SR_j + 0.991075 \Delta TO_j * \Delta AO_j + 0.6998 \Delta N_j.$$

At the same time, the initial model has no more than 5% average deviation in the coefficients, which allows us to say the reliability of the correlation indicators for assessing the impact of using an IT solution on the change in sales indicators.

Having calculated the data on the basis of 130 outlets before and after the implementation of the digital strategy, it was found that the growth in income over the same period was from 21 to 35% per year.

8. Conclusion

Thus, with the service model, when the income of the SEC is a fixed % of turnover, the implementation of a digital strategy and, on its basis, the developed and implemented IT solution has a growth effect on the following parameters of the SEC:

Reduced call center costs - 24%

The growth of regular customers (tenants) - 38%

At the same time, the resulting model makes it possible to predict that in order to increase the profitability of the SEC by 1% per month while maintaining the salary, the quality of service can be improved by 11%.

The implementation of this digital strategy TS Property management contributes to building long-term relationships with partners, provides an information basis for building loyalty programs and pricing policies of the company, reduces costs, which, in turn, with well-developed marketing strategies, will be aimed at increasing the market share and developing companies.

Conflict of interests

The authors do not declare the presence of any potential conflicts of interest.

References

- Aujirapongpan, S., Songkajorn, Y., Ritkaew, S., Deelers, S. (2020). Japan's digital advance policy towards performance in multilateral ASEAN's innovation business. *Entrepreneurship and Sustainability Issues*, 8(1), 1081-1094. [http://doi.org/10.9770/jesi.2020.8.1\(72\)](http://doi.org/10.9770/jesi.2020.8.1(72))
- Bacho, R., Pukala, R., Hlibko, S., Vnukova, N., Pola, P. (2019). Information Management: the Key Driver of the Economic System's Development. *Marketing and Management of Innovations*, 3, 297-307. <http://doi.org/10.21272/mmi.2019.3-23>
- Baklanova, O., Petrova, M., Koval, V. (2020). Institutional transmission in economic development, *Ikonomicheski Izsledvania* (Economic Studies), 29(1), 68-91
- Barmuta, K. A., Akhmetshin, E. M., Andryushchenko, I. E., Tagibova, A. A., Meshkova, G. V., Zekiy, A. O. (2020). Problems of business processes transformation in the context of building digital economy. *Entrepreneurship and Sustainability Issues*, 8(1), 945-959. [http://doi.org/10.9770/jesi.2020.8.1\(63\)](http://doi.org/10.9770/jesi.2020.8.1(63))

- Barry Libert, Megan Beck, Yoram Wind, (2016). 7 Questions to Ask before Your Next Digital Transformation. *Harvard Business Review*.
- Brodie, R.J., Juric, B., Ili, A., Hollebeck, L.D. (2011), Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis. *Journal of Business Research*, 66(1) <https://doi.org/10.1016/j.jbusres.2011.07.029>
- Butkovskaya, Galina, Sumarokova, Ekaterina (2019). Digital strategies of companies: growth potential and reasons for failure. *E-Management*, 3, 48–57. <http://doi.org/10.26425/2658-3445-2019-3-48-57>
- Cant, M.C, Doomun, R., Wiid, J.A. (2020). Is the use of mobile health apps healthy or toxic to consumers? *Entrepreneurship and Sustainability Issues*, 8(1), 1162-1176. [http://doi.org/10.9770/jesi.2020.8.1\(78\)](http://doi.org/10.9770/jesi.2020.8.1(78))
- Correani A., De Massis A., Frattini F., Messeni Petruzzelli A., Natalicchio A. (2020). Implementing a digital strategy: Learning from the experience of three digital transformation projects. *California Management Review*, In press.
- Czuderna, A., Budke, B. (2020). How Digital Strategy and Management Games Can Facilitate the Practice of Dynamic Decision-Making. *Education Sciences*, <http://doi.org/10.3390/educsci10040099>
- Devang, V., Chintan, Sh., Gunjan, T., Krupa, R. (2019), Applications of Artificial Intelligence in Marketing, *Annals of Dunarea de Jos University of Galati Fascicle I Economics and Applied Informatics*, <https://doi.org/10.35219/eai158404094>
- Dyachenko, Yu., Nenkov, N., Petrova, M., Skarga-Bandurova, I., Soloviov, O. (2018). Approaches to Cognitive Architecture of Autonomous Intelligent Agent. *Biologically Inspired Cognitive Architectures*, Elsevier, 26, 130-135, <https://doi.org/10.1016/j.bica.2018.10.004>
- El-Gohary, H., Edwards, D. J., & Huang, J. (2013), CRM practices by small business in developing economies: A case of Egypt. *International Journal of CRM*, 4(2), 1–20.
- Feng, C.M., Parka, A., Pitt, L., Kietzmann, J., Northey, J.G. (2020), Artificial intelligence in marketing: A bibliographic perspective. *Article in Australasian Marketing Journal (AMJ)*, <http://doi.org/10.1016/j.ausmj.2020.07.006>
- Frank, U., (2014), Multi-perspective enterprise modeling: Foundational concepts, prospects and future research challenges. *Software & Systems Modeling*, 13, 941-962.
- Harmeling, C., M., Moffett, J.M., Arnold, M.J., Carlson, B.D. (2017). Toward a theory of customer engagement marketing. *Journal of the Academy of Marketing Science J*, 45, 312–335. <http://doi.org/10.1007/s11747-016-0509-2>
- Hübner, A., Holzapfel, A., Kuhn, H. (2015). Operations management in multi-channel retailing: An exploratory study. *Operations Management Research*, 8(3-4), 84-100. <https://doi.org/10.1007/s12063-015-0101-9>
- Islamgaleyev, A., Petrova, M., Kurenkeyeva, G., Shalbayeva, S., Kadirbergenova, A. (2020). Increasing customer focus in metal trading. *Entrepreneurship and sustainability issues*, ISSN 2345-0282, 7(4) [http://doi.org/10.9770/jesi.2020.7.4\(48\)](http://doi.org/10.9770/jesi.2020.7.4(48))
- Jarmusevica, V., Ilisko, D., Badjanova, J., Jukss, V., Petrova, M. (2019). *SMART governance of implementing the strategy of corporate societal responsibility for a sustainable regional development*. International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM 19(5.3), 645-652, <http://doi.org/10.5593/sgem2019/5.3/S21.081>
- Korachi Z., Bounabat, B. (2019), Towards a Maturity Model for Digital Strategy Assessment, Conference Paper, https://doi.org/10.1007/978-3-030-36674-2_47
- Lincenyi, M., Michal, F. (2020). Development of the radio market in the Slovak Republic in the years 2016 to 2019. *Insights into Regional Development*, 2(3), 689-702. [https://doi.org/10.9770/IRD.2020.2.3\(6\)](https://doi.org/10.9770/IRD.2020.2.3(6))
- Matia, F., R. Sanz, Puente, E. A. (1997), Increasing Intelligence in Autonomous Wheelchairs, *Journal of Intelligent and Robotic Systems* 22, 211–232,
- Mikhailov, V., Karasev, V., Mikhailov, G. (2018). The Study of the Main Indicators of the Local Environmental and Economic System “Industrial Enterprise-Environment”. E3S Web Conf.41, 2018. IIIrd International Innovative Mining Symposium. <https://doi.org/10.1051/e3sconf/20184102015>
- Mussapirov, K., Djalkibaev, J., Kurenkeyeva, G., Kadirbergenova, A., Petrova, M., Zhakypbek, L. (2019). Business scaling through outsourcing and networking: selected case studies. *Entrepreneurship and Sustainability Issues*, 7(2), 1480-1495. [http://doi.org/10.9770/jesi.2019.7.2\(48\)](http://doi.org/10.9770/jesi.2019.7.2(48))
- Petrova, M., Sushchenko, O., Iryna Trunina, Nadiya Dekhtyar. (2018). *Big Data Tools in Processing Information from Open Sources*.

IEEE First International Conference on System Analysis & Intelligent Computing (SAIC-2018)) Kyiv, Ukraine 08-12 October 2018, IEEE Catalog Number: CFP18SUA-CDR, ISBN: 978-1-5386-7195-5, 256-260, <https://doi.org/10.1109/SAIC.2018.8516800>

Pfenning P., Eigner M. (2020). A novel procedure model for developing individualized digitalization strategies, International Design Conference, <https://doi.org/10.1017/dsd.2020.308>

Štefko, R., Bačík, R., Fedorko, R., Oleárová, M., Rigelský, M. (2019). Analysis of consumer preferences related to the use of digital devices in the e-commerce dimension, *Entrepreneurship and Sustainability Issues* 7(1): 25-33. [http://doi.org/10.9770/jesi.2019.7.1\(2\)](http://doi.org/10.9770/jesi.2019.7.1(2))

Van Kemenade, E.A., Hardjono, T.W. (2019), Twenty first century total quality management: the emergence paradigm, *TQM Journal*, 31(2), 150-166.

Vasilev, V. L., Gapsalamov, A. R., Akhmetshin, E. M., Bochkareva, T. N., Yumashev, A. V., Anisimova, T. I. (2020). Digitalization peculiarities of organizations: a case study. *Entrepreneurship and Sustainability Issues*, 7(4), 7(4), 3173-3190. [https://doi.org/10.9770/jesi.2020.7.4\(39\)](https://doi.org/10.9770/jesi.2020.7.4(39))

Venkatesh, V., Morris, M.G., Davis, G.B., Davis, F.D. (2003). User acceptance of information technology: Toward a unified view', *MIS quarterly*, pp. 425-478

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