

## RISK IN BUILDING THE INTELLIGENT ORGANIZATION MODEL

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**Abstract.** *Contemporary organizations are focused on continuous improvement of their business. One of the possible measures in this area is the evolutionary structure of the corporate structure of the smart organization, starting with the model of the learning organization, through a model of agile (and partly creative) organization. There are different ways to build an intelligent organization. This article focuses on risk analysis as one of the pillars of raising the "intelligence" of an enterprise. The purpose of this paper is to show how risk analysis can be the basis for building and developing a smart organization model within an enterprise. The basic research method is an in-depth personal interview, based on case study of UniGlass Polska Sp. z o.o. The choice of the enterprise for the study was deliberate – the selection criterion was the company's "intelligence" level and the availability of data and the ability to conduct an in-depth interview with the management staff of the company. The interview was conducted during May and June 2017 period using a standardized questionnaire. The study indicated that building and improving the intelligent organization model should be systemic and include both the business model and its relationship with the wider environment. The systemic approach gives rise to the deployment and development of integrated risk management in the enterprise, which enables a holistic perception of the risk factors that influence the building and improvement of the intelligent organization model. The case study used a risk map tool to identify the key risk areas for a company's business (both the opportunities to be strengthened and the risk factors to be weakened), ranging from least impacted areas to areas with the greatest impact.*

**Keywords:** *risk; risk map; risk factors; intelligent/smart organization; stakeholders.*

### Introduction

In the contemporary world, a competitive business model that works properly in nowadays reality may be inadequate in a few days, and moreover, it may show elements of "antiquity". Consequently, every organization must continually learn about the environment, its stakeholders, the direction of its further development and the limits of risk that it can incur. Naturally, no enterprise can be certain of the future and precisely because of the uncertainties and potentially various breakthroughs that are constantly evolving in the ever-changing business reality. Creating a specific model of the intelligent organization, which is all about defining its risks limits in micro- and macroeconomic conditions, is, of course, the most desirable in building the competitive

business model in every sector. The complexity and variability of the contemporary environment have significantly changed the relationship along the organization-environment line and require flexible and creative organizations to adapt to the needs of stakeholders and possess the ability to anticipate the future. To be successful in this increasingly competitive global market, the organization must undertake its activities based on the current interdisciplinary knowledge, creativity, "intelligence"<sup>1</sup>, as well as in the frameworks of Internet of Things (IoT) and the circular and sharing economy (Wereda & Korneć, 2016, p.125).

The aim of the paper is to present, from the theoretical perspective, the role of building intelligent organization model based on the process of estimating risk. The paper is also a trial of the description of the risk factors in the intelligent organization and the importance of the creation of intelligent enterprises in achieving success, from a general perspective of preventing risk areas in the turbulent environment.

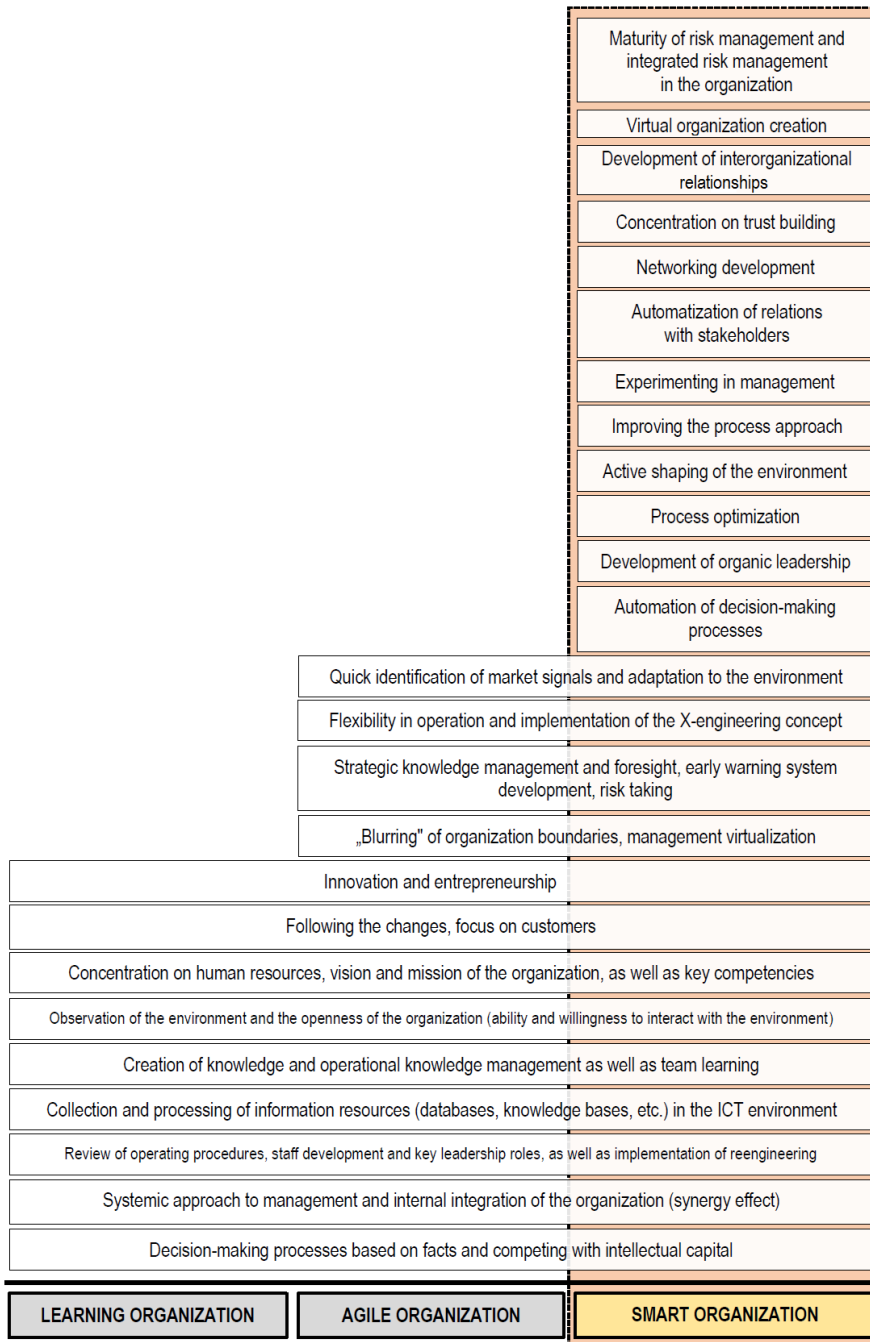
### **Attributes of intelligent organization**

The first descriptions of the intelligent organization took place in the 1990s in the publications of G. Pinchot and E. Pinchot, as well as J.B. Quinn. According to the first two authors, the requirement for an intelligent designation is to use the intelligence of their employees (Pinchot & Pinchot, 1990, p.19). By contrast, according to J.B. Quinn (1992, p.48) intelligent organization transforms intellectual resources into a service chain that creates an offer for a certain group of customers with the most useful features. On the other hand, B. Dayyani (2009, p.973) considers the intelligent organization to be the one that managed to create a knowledge base and competitive advantage in the area of customer value creation and information input. A number of interpretations of the concept of intelligent organization exist in the literature of the subject. It is also worth noting that the various aspects of its functioning are exposed, starting with the management of human capital, through learning, knowledge acquisition, and ending with gaining competitive advantage in the market (Godlewska-Majkowska, 2013, p.11). The intelligent organization can also be considered a learning organization that has the ability to create, organize, acquire and share knowledge and use to improve its performance and increase its competitiveness in the world markets (Krawczyk-Sołtys, 2016, p.69) as well as expanding the pro-innovative character of the business.

Nine principles of intelligent organization can be distinguished according to D. and J. Matheson (1998, p.111): the creation of values, disciplined decision-making system, open information flow, continuous learning, strategic thinking, system thinking, development of alternative solutions, uncertainty management, and partnership between all employees. On the other hand, the characteristics of intelligent organization describe (Krawczyk-Sołtys, 2016, p.70):

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<sup>1</sup> "Intelligence" of an organization is defined in this study as the ability to take action in a changing environment, to create and maintain relationships with stakeholders, confidence and trust-building, as well as the ability to adapt to the environment, mainly with the use of information and communication technologies (this is, among other things, about optimization of the basic processes and automation of decision-making processes). Each entity functioning on the basis of the model of intelligent/smart organisations may have a different level of "intelligence".



**Figure 1. Basic attributes of learning, agile and intelligent/smart organization – incremental view**  
*(Own study based on Wereda & Woźniak, 2015, p.65)*

- adaptability, or adjustment of relevant business indicators (profit, costs, revenues) to short-term business climate change;
- self-awareness and market awareness;

- border fluidity and network-like structure; this organization is able to change its scale of operation to adapt to rapidly changing needs;
- ability to transform into better and new forms (this is a long-term process where no final state is assumed);
- agility, i.e. ability to adapt to the market and needs of stakeholders;
- self-improvement and innovation;
- using automation of processes and information technology in current operations.

Figure 1 shows the author's model<sup>2</sup> by Wereda and Woźniak (2015, p.65) showing the main attributes of an intelligent organization. This model also highlights the differences between intelligent and learner-agile models, while pointing out that the basic model is learning organization – this framework introduces the basic mechanisms for creating and diffusing knowledge within the organization and between the organization and its external stakeholders. In the model of the intelligent/smart organization - in relation to the basic models of learning and agile organization – the main emphasis is put on the improvement of process management. It's not just about process optimization with the use of information and communication technologies and the automation of decision-making processes, but also (if not primarily) a thorough understanding of these processes and their location in the system of the organization. Willing to build a model of a smart organization it is necessary to draw the attention to the maturity of the management of the different classes of processes, including also risk management. Risk management in the model of smart organizations, on the one hand, gives grounds to avoid the risks and, on the other hand, allows to increase resources of knowledge and understanding of mechanisms within the organization and its relationships with external stakeholders. Risk management (especially in terms of integrated process) gives grounds to raise the level of trust between the organization and entities in its surroundings, thus creating lasting bonds with stakeholders (not just external, but also internal ones). On this basis in the model of a smart organization leadership can be developed, as well as these organizations are able to both participate in network structures and actively build/establish and shape these types of structures. Models of learning and agile organization are mostly passive (adaptive) models, whereas a smart organization model is an active model (having influence on the environment), prepared for the actions in the terms of the uncertainty (Figure 1).

### **Risk factors in the intelligent organization**

The activities of contemporary organizations are determined by a number of different factors, which relate elements and relationships identified on the micro, medium, macro and mega-economic levels. This approach to identifying, specifying, analyzing and evaluating the determinants of the functioning of different types of organizations

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<sup>2</sup> The model was developed on the basis of literature analysis of the subject, among others: Quinn, 1992, p.213 et seq.; Wassermann, 2001, p.43 et seq.; Delic & Dayal, 2002, pp.3-4; Sydänmaanlakka, 2002, p.7 et seq.; Mikuła, 2008, pp.15-19; Walczak, 2010, pp.348-356; Senge, 2012, p.21 et seq.; Zaskórski, 2012, pp.27-31; Kaczmarek, 2013, pp.157-162; Sajdak, 2013a, pp.70-78; Sajdak, 2013b, pp.204-211; Sajdak, 2013c, pp.250-259; Mezgár, 2005, p.246 et seq.; Weiß & Trunko, 2002, p.615 et seq.; Looise, 2016; Al-Kasasbeh, Al-Kasasbeh & AL-Faouri, 2016, p.106 et seq.; Caporarello, Di Martino & Martinez, 2014; Khan & Haleem, 2015, p.807 et seq.

is consistent with both holistic approaches and network thinking. The potential risk factors may determine the transition of the organization to new, innovative business models, based on, *inter alia*, in the model of smart organization. Among the basic risk factors for the model of intelligent organization, the following should be mentioned:

- changes in the perception of the human factor in the context of the possessed and developed competences (especially at higher levels of management), the role and importance of employees in creating added value for stakeholders or the improvement of organizational culture aimed at creating trust and, on the other, supporting the pro-innovative attitude (on the base of Paliszkievicz, 2010, pp.6-13);
- continuous growth in the role and importance of information resources and so-called useful knowledge (i.e. the knowledge that is really needed in the organization and the application of which will increase the efficiency, efficacy and effectiveness of the processes) (see e.g. Wawrzynek, 2013, p.187 et seq.; Wąsowicz, 2013, p.130 et seq.; Wesołowski, 2009, p.275 et seq.); the key issue for information and decision processes (including knowledge management) is the efficiency account, which includes not only the processes of storing, processing and sharing information resources, but also their acquisition, among other things, from internal and external stakeholders – the acquisition of data and low information utility results in the need to calculate alternative costs;
- establishing long-term relationships across organizations with different classes of actors (business, social, and public), e.g. in clusters or other types of network structures (see e.g. Pakulska & Poniatowska-Jaksch, 2015, p.90 et seq.); in this case, the primary source of risk, in this case, is the ability of the organization to participate in the overarching goal of the entire network structure, as well as the need to protect its own resources (e.g., expertise), and maintain its internal capacity to meet its own goals by the organization while participating in the network structure (see e.g. Łobejko, 2010; Łobejko, 2015, p.149 et seq.);
- the progressive processes of the specialization of the organization and the need to delegate tasks to external entities, often geographically remote; today's smart organizations see the negative implications of offshoring and decide to keep some (or even all) processes in their own structure – to support native/national/regional industries and clusters (Woźniak, 2015, p.236 et seq.);
- changes in the socio-economic, legal and cultural conditions of the location of the organization; for some factors, the organization may have no influence, which may, in turn, result in limiting the scale and scope of processes and reducing the effectiveness of the actions.

It is important to remember that smart organizations, despite having the means and the power to do so, are not always able to do so in order to consciously shape their environment to optimize the benefits (not only financial but also social) by internal and external stakeholders. In order to fully utilize the potential of the intelligent organization model, it is necessary to implement and refine risk management processes, with particular emphasis on identifying and evaluating risk factors as well as subsequent risk management (see ISO 31000:2009). In the case of the intelligent organization model – given the complexity of processes and relationships – it is appropriate to develop an integrated approach to risk management (on a base of Przetacznik, 2016, pp.42-47), as well as the perception of risk not only as a source of threats and losses but also opportunities and benefits (Kasiewicz & Rogowski, 2006, p.34). In a smart organization – in the context of the specific "management" of risk factors – the importance of risk appetite takes on the importance of risk-taking in

order to achieve future benefits (on a base of Danielsson, Shin & Zigrand, 2009, p.3 et seq.). Intelligent organizations can in some sense talk about "planning" risk factors, organizing resources for the constructive use of these risk factors, motivating employees to show risk aversion, or monitoring the extent to which goals are met, to achieve the expected benefits of taking the risk.

## **A case study of Uniglass Polska Sp. z o.o.**

### ***Methodology of the research***

The main objective of the study is to indicate that risk analysis can be the basis for shaping and developing a model of smart organization. Applied research methods are the individual in-depth interview and the case study. In the development of the study was applied the so-called typical case study, which is partly the basis for the generalization of the processes. A typical case study has been selected as a research methodology relevant to the issued raised, as the principal goal of the case study is to identify the characteristics of the class of enterprises based on the smart organization model. Uniglass Polska Sp. z o.o. it is the case study, "rich" with information, as it is a benchmark in terms of business development and risk management for other businesses with a similar business profile, and it is a market leader. The selection of the type of case study as a research method was based on the classification included in (Karaś, 2014, pp.334-336; Flyvbjerg, 2004, p.426). The study concerns the so-called individual case study - the main aim of the study is to understand the application of risk analysis processes in the development of the intelligent organization model, taking into account the specific situational context (based on Brycz & Dudyk, 2010, p.26). This method was used, modelling (with simplicity) on the scheme of the research process, using the case study method proposed by K. Eisenhardt (Brycz & Dudycz, 2010, pp.26-30).

The case study was based on a total of 7 interviews with middle and top managers in the period of May-June 2017. A standardized questionnaire with 10 open questions was used in the interviews. The average time taken for each interview was about 1.5 hours. Interviews were conducted by W. Wereda and jointly developed with J. Woźniak. The basic questions in the questionnaire are:

1. What factors determine the success of your company?
2. In which areas your company grows fastest?
3. Do you react to changes in the market environment? What do these changes mean? Does adjusting to these changes require your investment outlay?
4. How do you approach to risk management issues in your company? Do you make a current analysis of risk factors in your company?
5. What are the risk factors most likely to occur in your business? Do they only produce negative or also positive effects?
6. Is the risk analysis linked to the strategic management processes in your company? If so, in what way?

Based on interviews, risk maps have been developed (both for opportunistic and hazard factors) that have led to the identification of those factors that are critical in shaping and improving the intelligent organization model in UniGlass Polska Sp. z o.o.

### ***Company history***

UniGlass Polska Sp. z o.o. headquartered in Łomża, Poland, manufactures glass panels and is proud of professional glass and mirrors processing. The history of the founding of the organization dates back to 2001, but the idea itself was born much earlier, as it was already in 1998. It was then that two colleagues, who for many years worked in a prestigious building company, decided to establish a joint venture. Since complex glazing is a costly undertaking, they have begun to raise funds for future investments through overseas trips for profit. Half of the year 2000 is a vigorous effort to start a business – building simple machines on their own, finding the market for the latest professional equipment – the most critical in the industry, finding premises for business activities with a production profile and adapting rented premises. The date was 27 April 2001, when the business partnership was registered under the name of UNIGLASS Radosław Florczyk, Adam Wieczorek s.c. based in Łomża. Since its inception, all legal aspects have been fulfilled:

- in the long-term and costly procedure supervised by the Institute of Glass and Ceramics in Warsaw, a security mark was obtained, confirming the high quality of the products;
- the composite glass was subjected to so-called preliminary type tests, which had passed all tests positive at the Institute of Glass and Ceramics in Cracow.

The partners knew the industry well and were aware of the constant competition in the market, but they were young, enthusiastic and self-confident. At first, they were skeptical of both the suppliers and local customers who did not believe in the success of the venture. Most fear, however, aroused the specter of potential product complaints. All doubts were, however, mistaken, since there were no significant complaints about the quality of the glass produced during this period. With their industriousness and resourcefulness, the shareholders have proven that they are able to meet the goals and, to everyone's surprise, thrive on their plant. The year 2006 brought further changes to the company – the company was transformed into a capital company with an entry in the Register of Entrepreneurs of the National Court Register launched a new division of life under the name of UNIGLASS Polska limited liability company. Poland's accession to the European Union provided the potential for additional funding for further investments, i.e. further innovative development of the company.

The significant period for the company was 2010, when one of the partners, Adam Wieczorek left the Company and Dariusz Florczyk took his place. The situation was even more motivated by the actions of shareholders, especially Radosław Florczyk, under whose hand the company has evolved exponentially. From the beginning of the consistently implemented activity an investment and innovation program aimed at dynamically increasing the quality of offered goods and services. Glazing production takes place on the world's highest-class machines and equipment, using the highest quality raw materials and production materials. The quality was constantly verified by all current and potential suppliers and constant inspection of the quality of goods offered was conducted. Interoperational quality control of the manufactured products resulted in the creation of a brand not only in Poland, but also abroad (Quality Book of UniGlass Polska Sp. z o.o., 2011, pp.3-4).

### *Company success factors*

From the very beginning, the owners of the company have set up a strategy of quality and relationship building with all interest groups, especially customers and suppliers. Due to the fact that the company evolved rather quickly, due to process innovativeness, at the end of 2016 the company employed almost 100 people, of which about 85% were production workers. Management personnel in individual interviews highlighted the following key success factors and strengths of the company (Wereda, 2015, p.227):

- long-term experience of owners in glass processing and business;
- very good organization of work within the organization;
- highly qualified (internally) production and managerial staff;
- professional customer service and good customer relations;
- good technical condition of buildings and production lines;
- modern machine park;
- world-class technology and co-creation of new technological infrastructure;
- production only with the best raw materials and materials for production from reputable national and European suppliers;
- high quality and pro-innovative nature of the offered products;
- good and long-term relationships with stakeholders;
- knowledge of customer needs and building a permanent customer base;
- variety of main product offer: composite glass with heat shield, protective glass (laminated, reinforced, hardened), decorative glass with different degree of transparency and light transmission, sunscreen and self-cleaning and using interlaced louvers and shutters;
- gradual expansion of the product offering in the area of growing demand;
- brand recognition among company stakeholders;
- export business (distribution of products across Europe);
- short delivery times tailored to customer needs;
- own transport fleet;
- technical support for high efficiency and productivity;
- implemented quality, environmental and occupational safety management systems;
- experience in the use of European Union aid programs;
- major investments in human capital and staff development through training and courses within and outside the organization;
- outsourcing services for competition.

It can be noted here that UniGlass Polska Sp. z o.o. key success factors, on the one hand, led the company to success; on the other, they were seen as key areas of improvement. Systematically incurred capital expenditures and supervision of the implementation of the objectives were key success factors at the beginning of UniGlass Polska Sp. z o.o. and they took the form of risk factors – mostly pejoratively. The company was forced to "fight" for product quality, customer and supplier trust, financial resources, professionals, etc. Only in the long run risk factors (i.e. threats) have become a factor of chance. It is also important that the owners/founders of the company have a specific appetite for risk and did not act only conservatively. In addition, the key success factors are the image of UniGlass Polska Sp. z o.o. in a systemic way – they combine different classes of resources (human, financial, material, etc.), process types (e.g., primary and auxiliary), as well as stakeholder classes with which the company entered or enters into relationships.



**UniGlass Sp. z o.o. risk factors**

Based on direct interviews with management, administrative and production staff, specific conclusions may be identified that underlie the specification of groups of risk factors, as well as estimates of the impact of specific risk factors on the business of the audited company, both positive and negative (Table 1). At this point, it is worth mentioning that at UniGlass Polska Sp. z o.o. an official formalized paper version of the risk management system is officially not available, however, there is a formalized form of verbal representation by senior management to all department managers. The paper form of risk management rules is created only for the purpose of acquiring new funds for innovative projects from EU funds.

**Table 1. Basic groups of risk factors in a company UniGlass Sp. z o.o.  
(Own study<sup>3</sup> based on company sources; Wereda, 2013, pp.243-248)**

Group of risk factors	Selected risk factors	Probability of risk factor*	Estimated value of losses for the company**	Estimated risk value (negative impact)** *	Estimated benefit value for the company**	Estimated risk value (positive impact)** *
1	2	3	4	5=3*4	6	7=3*6
<b>Risk in IT area</b>	Breaking into the company's IT system by outsiders	3	5	15	0	0
	Development and commercialization of own IT systems (sales to competitors)	3	1	3	4	12
	Implementation and development of decision process automation	3	2	6	4	12
<b>Risk in the area of human resources</b>	Rotation of specialized managerial staff	2	5	10	1	2
	Rotation of administrative	2	3	6	1	2

<sup>3</sup> The table was developed according to the Risk Score methodology. Due to the trade secret of UniGlass Sp. z o.o. full descriptions of the probability, impact and risk scales are not included in the paper. However, it should be added that the probability value and the value of the effects have been estimated on the basis of opinions of respondents (interviews) referenced to historical data (frequency of occurrence of risk factors) and the company's forecasts. On this basis, quality scales were developed (from 1 to 5). For the value of the probability of occurrence of these risk factors on the level "1" was assumed to the range 0-10%, for "2" there was a range of 11-30%, for "3" there was a range of 31-50%, for "4" there was a range of 51-80% and for "5" there was a range of 81-100%. For the value of results (losses and benefits) there was developed the estimated scale that refers to the share of the potential benefits and losses in the value of the current, average per month, company's revenue from the core business. For losses on the level "1" was assumed a range of 0-5% of the value of the current revenue, which means that if the risk factor occurs, it will generate losses of up to 5% of the revenue, so the enterprise does not feel strong negative effects. For losses on the level "2" was assumed a range 6-10%, on the level "3" there was a range of 11-20%, and on the level "4" a range of 21-50%, while on the level "5" a range of 51-100%. For the benefit on the level "1" was assumed a range of 0-5% of the value of the current revenue, which means that if the risk occurs, it will generate benefits of maximum value of 5% of the revenue, so the company does not feel strong positive effects of this factor. For the benefit of the "level "2" was assumed a range of 6-10%, on the level "3" a range of 11-20%, on the level "4" a range of 21-50%, while on the level "5" a range of 51-100%.

	staff					
	Rotation of production workers	3	1	3	1	3
	Successful implementation of mechanisms for triggering trust between employees at managerial level	3	3	9	4	12
	Improving production staff	3	1	3	2	6
<b>Risks in the area of technical infrastructure</b>	Line failure	4	5	20	0	0
	Keeping up with technological developments in the industry	4	4	16	4	16
	Maintaining continuity of production processes (good state of machine stock)	3	5	15	4	12
<b>Market risk</b>	Establishing lasting relationships with new customers	5	4	20	3	15
	Maintaining lasting business relationships with regular customers	4	3	12	5	20
	Maintaining lasting relationships with new suppliers	3	5	15	4	12
	Maintaining lasting relationships with regular suppliers	4	2	8	3	12
	Active business of competitors	4	3	12	4	16
	Training subcontractors	4	3	12	5	20
	The effectiveness of the company's targeted policy	3	3	9	4	12
<b>Financial risk</b>	Maintaining financial liquidity	4	1	4	5	20
	Timely settlement of tax and social security obligations	4	1	4	4	16
	Timely receipt of receivables from new customers	3	3	9	4	12
	Timely receipt of receivables from fixed customers	5	1	5	4	20
<b>Risk</b>	Providing information to	2	5	10	0	0

<b>in know-how</b>	competitors by employees					
<b>Risk in the area of innovation</b>	Launching innovative products	5	2	<b>10</b>	5	<b>25</b>
<b>Risk in marketing</b>	Ensuring product visibility in the market	4	3	<b>12</b>	5	<b>20</b>

\* The following qualitative scale is accepted for probability: very low (estimate 1), low (estimate 2), average (estimate 3), high (estimate 4) and very high (estimate 5).

\*\* The following qualitative scale is used for the effects (losses/benefits): very low (estimate 1), low (estimate 2), average (estimate 3), high (estimate 4) and very high (estimate 5).

\*\*\* The risk estimate is the product of the estimated probability and level of effects.

Table 1 lists selected risk factors that are included in UniGlass Polska Sp. z o.o. it is worth noting here that the basic areas of analysis of risk factors are: human resources (human resources processes management), technical infrastructure (including ICT), innovation processes, know-how, financial management, marketing and market environment. In addition, the identified groups of risk factors reflect the structure and scope of these key success factors for UniGlass Polska Sp. z o.o.

### ***Risk factors in building the intelligent/smart organization model in UniGlass Sp. z o.o.***

Building a model of smart organization requires paying attention to the specific components of this model (see Figure 1) and gradually incorporating these elements into the structure of the company. Such an approach may stem from the specificity of risk management processes and refer to two perspectives of risk perception:

1. positive – connected with creation by UniGlass Polska Sp. z o.o. defined opportunities or the use of opportunities occurring spontaneously; these types of activities should result in the identification of new "building blocks" that, by incorporating them into the organization's operating system and improving over time, can raise the company's "intelligence" – e.g. by increasing the degree and scope of process automation, company relationships with external stakeholders, or the scope of experimentation in management and virtual creation of a company, and so on;
2. negative – associated with the identification of such risk factors that can be a source of loss; such an approach should serve the specification of the company's "building blocks", which should be reduced or eliminated in order to increase the "intelligence" of the company.

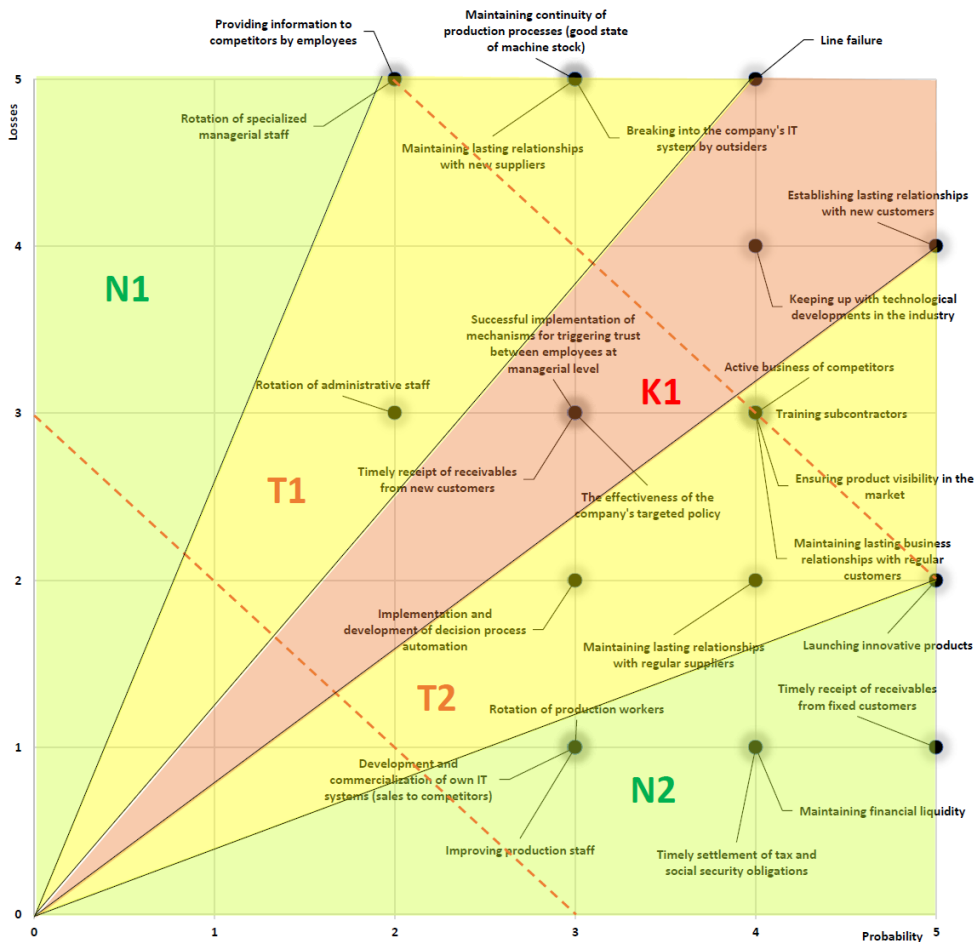
A tool to help raise the "intelligence" level of UniGlass Polska Sp. z o.o. may be a risk map – developed for both losses (Figure 2) and benefits (Figure 3). Both risk maps have been developed based on the estimated value of the parameters: the probability of a particular risk factor, the effects of the risk factor (both positive and negative), and the risk value assigned to the risk factor. Both maps have a standardized internal structure and consist of the following areas (Figures 2 and 3):

- two negligible risk areas (N1, N2) – the risk factors located in these areas (both in the context of losses and benefits to the company) do not have a significant impact on the design and/or enhancement of the smart organization model;

- two risk tolerance areas (T1, T2) – the risk factors located in these areas (both in the context of losses and benefits for the company) may have an impact on the construction and/or enhancement of the smart organization model, although this is not strong;
- one key risk area (K1) – risk factors located in this area (both in terms of losses and benefits for the company) has a fundamental and strong impact on the design and/or strengthening of the smart organization model.

It is also worth noting that each of these areas is further subdivided into sub-zones (Figures 2 and 3) in order to clarify the analysis and specification of more precise proposals and recommendations for the management staff:

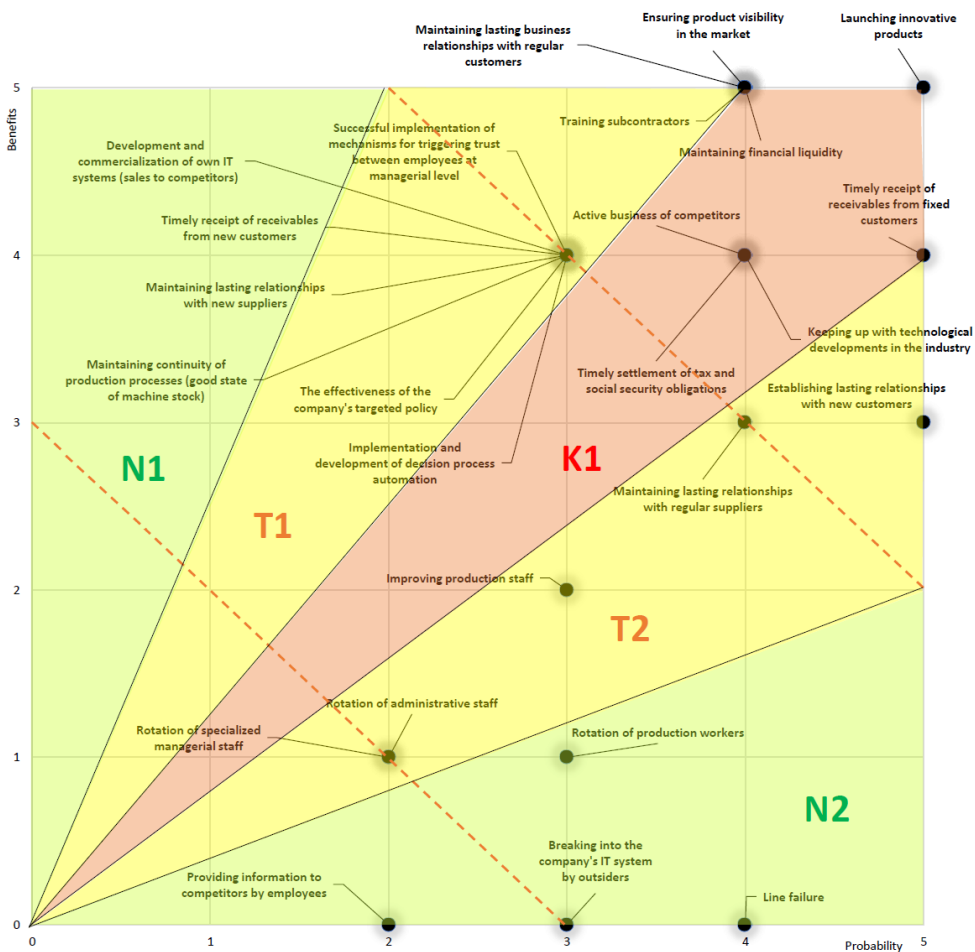
- the N1 and N2 areas are divided into two sub-zones;
- the areas T1, T2 and K1 are divided into three sub-zones.



**Figure 2. Sample risk map for selected risk factors (i.e. threats), resulting in losses for UniGlass Polska Sp. z o.o. (Own study)**

Analyzing risk maps for selected risk factors, resulting in losses for UniGlass Polska Sp. z o.o. it can be noticed that the smallest influence on shaping and building a model of smart organization in this company have: rotation of specialized managerial staff,

providing information to the competition of employees, improvement of production staff, rotation of production staff, development and commercialization of own IT system, timely regulation of tax and social security obligations, maintenance of financial liquidity and implementation of innovative products and timely receipt of receivables from fixed customers (Figure 2). This does not mean, however, that these factors have no impact at all on the foundations and development of an intelligent organization. Among the risk factors (as sources of potential losses) located in the N1 and N2 areas, the company should pay attention mainly to: the provision of information to competition by employees, the rotation of specialized managerial staff, the launch of innovative products and the timely receipt of receivables from regular customers – those risks are assigned the highest risk values in the N1 and N2 areas. It is clear to note that in order to build and perfect a model of intelligent organization in UniGlass Polska Sp. z o.o. risk should be minimized in the areas of innovation (including know-how), finance, and stakeholder relations.



**Figure 3. Sample risk map for selected risk factors (chance factors), resulting in benefits for UniGlass Polska Sp. z o.o. (Own study)**

In the T1 and T2 areas, the following risk factors play a major role (Figure 2): breakdown of the production line, break-in of the IT system, maintenance of durable

relationships with new suppliers, continuity of production processes, establishing of durable relationships with new customers, training of subcontractors, activity of competitors, ensuring product visibility on the market, and maintaining lasting business relationships with regular customers. In the case of T1 and T2, the key areas are relations with stakeholders (mainly external ones), market activity and IT infrastructure.

In area K1, a key risk factor affecting UniGlass Polska Sp. z o.o., that should be limited in the first place because it is the most "blocking" of building and developing a model of intelligent organization, is keeping up with technological innovations (Figure 2).

In the case of risk map analysis for opportunity factors (Figure 3), it can be observed that the least attention in building and improving the model of intelligent organization UniGlass Polska Sp. z o.o. must pay to factors located in the N1 and N2 areas. The main factor in these two zones is the rotation of production workers. This factor is primarily a source of dangers, but it can also generate certain benefits, such as "refresh" of teamwork, gaining new experience, rejuvenating employees, improving productivity, etc. This is not a benefit category that significantly enhances the model of intelligent organization in the study company. Other factors in the N1 and N2 areas do not generate any potential benefits for the company – such as the breakdown of the production line and break-in of the IT system.

In T1 and T2, the more important opportunities that a company should enhance and use are (Figure 3): ensuring product visibility in the market, maintaining liquidity, training subcontractors, maintaining durable relationships with customers, developing trust among employees, maintaining lasting relationships with new suppliers, maintain continuity of production processes, implement pricing policy, develop automation of decision making processes and establish lasting relationships with new customers and suppliers. It can be noted that in areas T1 and T2 the key to improving the level of "intelligence" of the company are areas of: relational capital formation, development of ICT infrastructure, as well as the company's activity in the market.

On the other hand, in K1, the key opportunities for UniGlass Polska Sp. z o.o. are (Figure 3): introducing innovative products to the market, active competitors, keeping up with technological innovations in the industry and timely settling tax and social security obligations. Therefore, the core areas in this zone responsible for building and improving the smart organization model in the company are the relational capital and innovation processes.

### ***Discussions and implications***

By analyzing both risk maps, it can be seen that some factors in the context of threats/losses are irrelevant or insignificant, while in the context of opportunities/benefits they play a key role (and vice versa). This situation indicates that the following actions should be taken in relation to these factors: at the same time weaken their negative effects and create conditions that will allow them to reorient on the desired effects (positive). One strategy should not apply, either to mitigate risk factors or to reinforce opportunities. This is because concentration on only one perspective of perception of risk factors (either positive or negative) can lead to the uncontrolled development of these factors in the direction undesirable for the

company. For example, maintaining financial liquidity is not a significant risk factor, but a significant factor of opportunity. This does not mean, however, that this factor should be considered only as a source of benefit, for example in terms of creating and implementing innovation, establishing relationships with external stakeholders, or developing technical infrastructure. It is important to keep in mind that this factor can cause certain risks. If there is no systematic monitoring of this factor, it may become a key risk factor and move, for example, into area K1 (Figure 3).

At UniGlass Polska Sp. z o.o. there is a combination of several organizational models, i.e. the model of the learning organization (internal and external training of human resources, clients and subcontractors as well as competition, etc.), agile organization model (fast adaptation to market and needs, competition, etc., intelligent organization model (pro-innovation activities in the field of automation of contact with stakeholders, use of own IT in production processes, etc.), or part of the model of creative organization, which is a part of the agile organization model (creation of new products and patents, productive co-creation, active impact of products on the market environment, etc.). It seems that in the "road" to reach the stage of smart organization, the company has gone through the previous stages. In addition, the company implements risk management processes, although they are not always fully formalized. Combining these processes with the identification of key success factors (emerging from the business model) creates a systematic and integrated image of the company. On this basis, it is possible to specify the factors of opportunities and threats that allow the company to go through the stages of strengthening its "intelligence".

Based on a risk analysis using the risk map tool, it was noted that UniGlass Polska Sp. z o.o. with the intention of strengthening and developing the model of smart organization, should limit the negative impact of factors located in the areas of relationships with external stakeholders, management of management staff, as well as innovation and know-how. These areas should be subject to continuous evaluation in order to be restructured and refined. For example, the company should find ways to mitigate the loss of new customers or the unreliability of new suppliers, or to limit the negative consequences of leaving a specialized managerial staff. Among the opportunistic factors that should be strengthened, of the key importance are: to bring attractive products to the market, the activities of competitors that stimulate the innovation of UniGlass Polska Sp. z o.o., as well as keeping up with technological innovations in the industry. An important activity for the company in building and improving the model of intelligent organization is, among others, increasing the effectiveness and efficiency of innovative processes, while at the same time co-operating with internal and external stakeholders and applying certain ICTs and manufacturing technologies.

## Conclusions

Building and developing the intelligent/ smart organization model in the enterprise is a complex, multifaceted and long-lasting process. It also often requires substantial investment. Therefore, such activities should be systemic (holistic) and refer to both the basic elements of the business model, such as technological processes, pricing strategies, customer relationships, distribution, etc. and to the location of the company in the environment, mainly in context of relations with basic groups of external

stakeholders, i.e. designation of the so-called boundaries of the organization. Building a model of an intelligent organization is not a single action, but a continuous and incremental activity, i.e. a "way" to a model of intelligent organization, which should consist of the following steps: the learning organization with the stages of learner organization and agile organization. In addition, the improvement of risk management system should take place at each of these stages. This is due to the fact that each of the next steps in building a smart organization model involves an increasing number of factors and conditions as well as the need for greater integration of the internal company and the integration of the enterprise into the wider environment. Generally speaking, risk management is an activity that provides the basis for identifying those factors affecting the business that may have the greatest impact on increasing its "intelligence" level. These factors can be viewed in two ways: as potential sources of loss/threat – these factors should be weakened or eliminated because they limit the building of a smart organization model and potential sources of benefits/opportunities – these factors should be strengthened and constructive as they can strongly support development of "intelligence" of the organization.

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