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# The Critical View on Innovation Activity in SME's Sector in Slovakia

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**Abstract.** Innovations are the drive of economic development advancing the possibilities of future competitiveness in the form of new knowledge and increasing economy's efficiency and performance, particularly through small and medium enterprises (SME). To strengthen innovation activities is one of the main tasks of SME nowadays. The aim of the article is to give the critical view on innovation activity in SME's sector in Slovakia. Because of the need to use a systemic approach the stress will be given to identifying main factors influencing innovation activity of Slovak SME. Presented will be results of own empirical research devoted to identification of main barriers to develop innovation activity identified among SME. Formulated will be presumptions and recommendations for relevant public institutions as well as for SME to overcome the barriers. For the research purposes we will utilize evaluation of relevant secondary data as well as results of own empirical research.

**Keywords:** innovation activity, summary innovation index, small and medium enterprises, barriers, presumptions, recommendations, Slovak Republic.

**JEL Classification:** L20, O30.

**Conference topic:** Internationalization Processes: Contemporary Challenges.

## Introduction

Current economy tends to be characterized as a new, global a knowledge-based economy. The new, global economy is the economy of knowledge and ideas, where innovative ideas and technologies fully integrated in services and products became a key to generation of new working positions and higher life standard. Only those businesses that are dynamic are able to respond to the market demand swiftly and are capable of research and development of new products, innovations and technological changes.

In the Europe 2020 Strategy is the area of innovations one of the initiating policies to start the EU potential for growth (European Commission 2010). Innovations are the drive of economic development advancing the possibilities of future competitiveness in the form of new knowledge and increasing economy's efficiency and performance. To strengthen innovation activities is one of the main tasks of small and medium enterprises nowadays.

Small and medium enterprises (SME) are forced to make innovations, because they are under permanent pressure of competitors at the market. From this point of view the ability to compete in innovations plays very important role as a factor of their competitiveness (Bessant, Tidd 2009).

The aim of the article is to give the critical view on innovation activity in SME's sector in Slovakia. Because of the need to use a systemic approach the stress will be given to identifying main factors influencing innovation activity of Slovak SME. Presented will be results of own empirical research devoted to identification of main barriers to develop innovation activity identified among SME. Formulated will be presumptions and recommendations for relevant public institutions as well as for SME to overcome the barriers. For the research purposes we will utilize evaluation of relevant secondary data as well as results of own empirical research.

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## Innovation performance of Slovakia

Innovation performance of the country is important indicator, which describes situation and effectiveness of the state policy and other tools supporting the innovation performance of domestic and foreign enterprises. In order to secure international comparison of success of innovations support within European Union, the Summary Innovation Index

(SII) was created. Summary Innovation Index takes into account a score of 25 indicators, which are divided into five groups.

The first three groups of indicators include innovative inputs and the last two groups include innovative outputs (Innovation Union Scoreboard):

1. Innovation enablers (5 indicators), which measure the structural conditions required for innovation potential.
2. Knowledge creators (4 indicators) which present the value of investment into research and development activities, which are considered to be a key determinant of the knowledge-based economy development.
3. Innovation and entrepreneurship (6 indicators) which measure the effort of enterprises on innovations, the effort of SME, private and cooperative, spending on research and development, venture capital and GDP.
4. Application of innovations in practice (5 indicators) which measure innovation performance expressed through business activities and participation in employment and added value in innovative sectors.
5. Intellectual property (5 indicators) which measures the achieved results in terms of successful know-how such as patents, trademarks and new design.

Classification of countries is consequently made upon the results of measurement for the 25 indicators. The countries in EU are classified into four categories: innovation leaders, innovation followers, moderate innovators, modest innovators. The position of Slovakia between the EU member countries according to Summary Innovation Index in the year 2014 is presented in Figure 1.

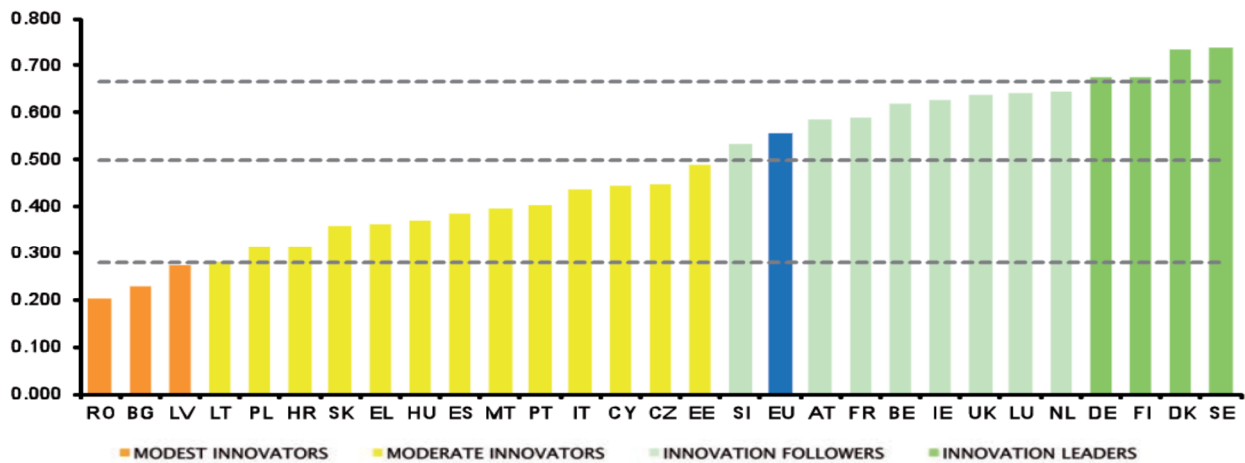


Fig. 1. Summary Innovation Index of EU countries in the year 2014  
(Source: European Commission 2015)

From a long-term point of view, Slovakia belongs according to the Innovation Union Scoreboard international comparison to the EU countries which lag behind the EU average considerably in the innovation performance. Slovakia ranks with regard to the SII into the group of moderate innovators (together with the Czech Republic, Hungary, Poland and other 9 countries).

Innovation performance of the Slovak Republic (Innovation index relative to EU average) in the years 2007–2014 is presented in Figure 2.

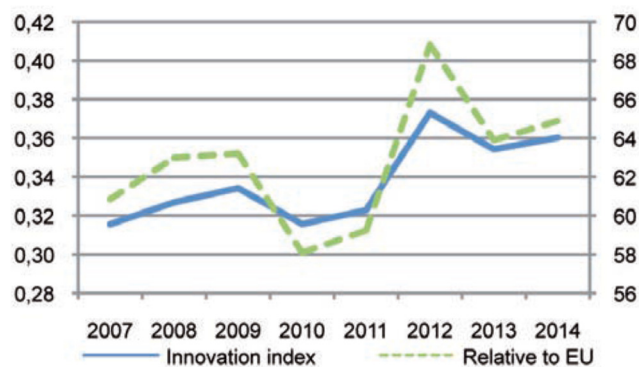


Fig. 2. Innovation Performance of the Slovak Republic (Innovation index relative to EU average)  
(Source: European Commission 2015)

From Figure 2 it is evident that innovation performance in Slovakia has increased between 2007 and 2014, but declined in 2010 and in 2013. The performance relative to the EU has had more fluctuations but over time has increased significantly. Performance relative to the EU reached a peak in 2012 at 69% of the EU, but fell to 64% in 2014. Based on the obtained values of the Summary Innovation Index 2014 for Slovakia it was 0.35 points, while the EU average was 0.55 (European Commission 2015).

Detailed view on SII indicators value of the Slovak Republic relative to the EU 27 average in the year 2014 is presented in Figure 3.

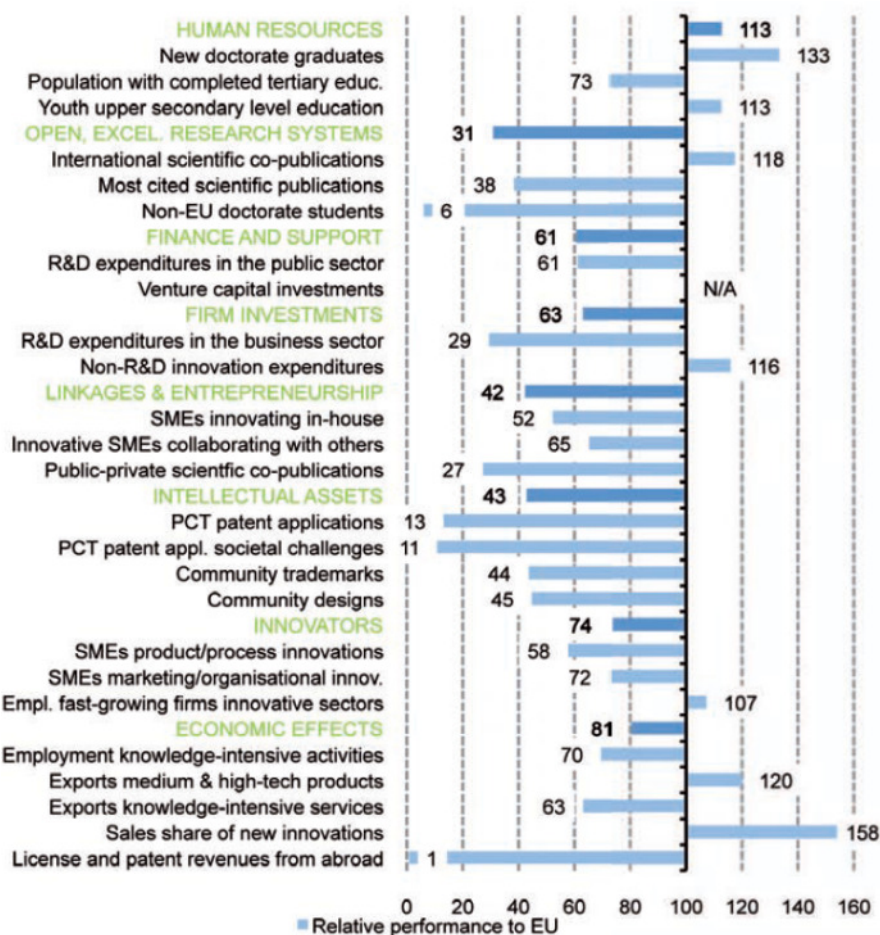


Fig. 3. SII indicators value of the Slovak Republic relative to the EU 27 average in the year 2014 (Source: European Commission 2015)

Figure 3 shows that Slovakia performs below the EU average for many dimensions. As to the year 2014 large relative strengths in terms of indicators are in Sales share of new innovations (158% to average of EU member states – large enterprises in automobile industry and machinery industry) and New doctorate graduates (133% of the EU average). Large relative weaknesses are in License and patent revenues from abroad (indicator hardly reaches 1.5% of the average of EU member states!), in Non-EU doctorate students (5.8% of the average of the EU member states) and in PCT patent applications in societal challenges (11% of the EU average) and PCT patent applications (13.2% of the EU average).

According to indicators given in European Innovation Scoreboard the financial investment in innovation is in Slovakia far below the average of the member states of the European Union. Indicator R&D expenditure in the business sector was in Slovakia in the year 2014 only 0.38 (Štatistický úrad SR. 2015) to 1.29 in the EU (that means 29% of the average in EU). (Better situation was in Non R&D innovation expenditure – acquisition of machinery, equipment and software, investments into training, acquisition of external knowledge, investment for introducing innovation on the market – that was 114.5% of the EU average).

As to the R&D expenditure in the public sector, it is for a long time very low (in the year 2014 it was 61% of the average of EU member states), the situation in venture capital investments is much worse (indicator is not given).

The two main indicators concerning the innovations in SME (SME introducing product or process innovations and SME introducing marketing/organizational innovations) are both below the EU member states. A detailed analysis within the companies is necessary to find out what are the main barriers to innovation activity in SME's sector.

### Innovations in small and medium enterprises in the Slovak Republic

From a long-term point of view the innovation activity of Slovak SME is according to the Innovation Union Scoreboard behind the EU average. Both main indicators concerning the SME are for a long time below the average of EU member states. The indicator on “SME introducing product or process innovations” reached in the year 2014 the value 58% of the EU average, the indicator “SME introducing marketing/organizational innovations” reached 72% of the EU average.

Table 1. Innovating small and medium enterprises in Slovakia  
(Source: European Commission 2015)

| Indicator   | 2011 |      | 2012 |      | 2013 |      | 2014 |      |
|---|------|------|------|------|------|------|------|------|
|   | EU27 | Sk   | EU27 | Sk   | EU27 | Sk   | EU28 | Sk   |
| SMEs introducing product or process innovations       | 34.2 | 19.0 | 38.4 | 26.0 | 38.4 | 26   | 30.6 | 17.7 |
| SMEs introducing marketing/organisational innovations | 39.1 | 28.3 | 40.3 | 27.2 | 40.3 | 27.3 | 36.2 | 26.2 |
| SMEs innovating in-house                              | 30.3 | 14.9 | 31.8 | 21.8 | 31.8 | 21.8 | 28.7 | 15.0 |
| Innovative SMEs collaborating with others             | 11.2 | 5.8  | 11.7 | 8.3  | 11.7 | 8.3  | 10.3 | 6.7  |

It is evident that all indicators (SME introducing product or process innovations and SME introducing marketing/organisational innovations) decreased during the last 3 years significantly. The situation is critical especially in indicator SME introducing product or process innovations – it has decreased in the year 2014 according to the year 2013 by 32% what is viewed very critical.

The decline is evident also in the indicator SME innovating in-house (in the year 2014 it was 31% less to the year 2013) as well as by the indicator Innovative SME collaborating with others (decrease by 20%).

To identify the main reasons of low innovation activity we have conducted in the year 2014 the large empirical research aimed at evaluating innovation activities in SME in Slovakia. One part of the research was oriented on identifying the main barriers of innovation activities in SME in Slovakia.

### Aim and methodology of research

The research conducted at our school in the year 2014 was aimed at three areas: evaluation of innovation activities of SME in Slovakia, identifying the barriers of their development and formulating the presumptions and recommendations to elimination of identified barriers. The research was conducted by the questionnaires distributed via electronic mail. Selective sample was created by 527 enterprises, 384 of them were small and 143 medium-sized enterprises. Representativeness of the sample was verified statistically by means of non-parametric test – chi-square test. The test confirmed a representative sample of selected set. From the overall number of enterprises more than 40% of enterprises worked in industrial branches (engineering, woodworking, electro technology, chemistry, and rubber industries). A third of enterprises were active in the sector of market services, 20% were from building industry and 10% acted in information-communication technologies.

For the question, if SME practise innovation activities, 174 enterprises responded positively from the overall number of 527 enterprises (33.02%), 112 of which were small and 62 medium-sized enterprises. Together 353 enterprises (272 small and 81 medium-sized) stated that they do not practise any type of innovation activities, while they try to act in the market without changes in entrepreneurial activity and they trust to their entrepreneurial strategy.

Table 2. Division of enterprises according to size structure and realization of innovations  
(Source: own research)

| Enterprise/Realization of innovation | Yes | No  |
|--------------------------------------|-----|-----|
| Small enterprises                    | 112 | 272 |
| Medium-sized enterprises             | 62  | 81  |

The question on identifying main barriers of innovation activity in small and medium-sized enterprises in the Slovak Republic was answered and discussed not only by SME that realize innovations, but as well by those enterprises without innovation activity. Innovative enterprises can provide information on barriers; they really meet when realizing innovation activities. On the other hand innovatively inactive enterprises will provide the reasons for innovation activities they do not perform.

We divided the barriers of innovation activity in SME into three groups from the viewpoint of their significance and influence upon innovation activities of SME. The division of barriers according to significance was carried out by means of statistical programme of SPSS.

## Results and discussion

The five main significant barriers to innovations in SME in Slovakia were identified: lack of financial means for innovation, high costs for innovation, quality of innovative environment, lack of qualified employees and absence of cooperation with other subjects in the field of innovation activities.

The main highly important factors that limit the possibilities of further innovation of slovak SME are cost based factors: *an insufficiency of resources within the enterprise and high costs for innovation* (more than 80% of respondents consider these two barriers as most significant). The main barrier within the group of barriers with a significant influence on innovation activities is the *lack of financial sources for innovation in an enterprise*. Financing of R&D activities in Slovakia is strongly below the average of the EU 27 countries. The indicators on R&D expenditure in the business sector are only 29% of the average of the EU, the indicator on venture capital investments is very low (is not given). The majority of SME in Slovakia considers the problems with the accessibility of financial sources for the most expressive factors limiting their innovation activities. The main external source of funding the innovation activities remain the structural funds through the priority axes of the Operational Programme Competitiveness and Economic Growth (Ministry of Economy) and the Operational Programme Research and Development (Ministry of Education). The two Ministries and their agencies (due to strict implementation of the Competence Act) cooperate insufficiently, which leads to fragmentation and implementation deficiencies. Enterprises introduced negative experience when they were acquiring means from the funds of the European Union, structural funds, or other public financial sources (bureaucratic demand, administration, corruption, ineffective redistribution of means, as well as ignorance of their drawing). The problems with acquiring the financial means force SME to innovate predominantly from their own financial sources.

*High costs for innovation* activities are the second main barrier belonging to this group. Realization of innovation activities is connected with high costs. 81% of respondents evaluate them as a significant barrier. Nevertheless, managers of enterprises should take into consideration that innovation is a prerequisite for obtaining a favourable position in the future (Cameron, Green 2006).

The third important barrier is the *quality of innovative environment and infrastructure for innovations*. More than 70% of respondents is critical to the quality of innovative environment. Respondents expressed critical attitude to the existence and activities of institutions supporting innovation activities as well as to the support of the rise and development of innovative SME from the side of the state. Critical is viewed that in Slovak regions the higher territorial units (VÚC) do not have innovation structures; there is no scheme for effective management of the state innovation policy and regional innovation strategies. An institutional framework for a more efficient connection between industry, results of R&D and practice is missing. The intention to create the regional innovation centres was to ensure implementation of the regional and state innovation policy in regions in order to assure the growth of competitiveness, reduction of regional disparities and growth of regional employment. Slow implementation, lack of coordination and consensus among the relevant ministries appears to be critical. Respondents were critical to the long-term absence of creating regional innovation centres, which should help to start the cooperation between SME on the one side and universities, research centres, technological parks on the other side, as well as to be helpful in the process of establishing the clusters.

*Qualified human resources* belong to one of the most important factor determining innovation activity. Managers of SME identified the lack of qualified employees as one of the significant barrier. In the Innovation Strategy of the Slovak Republic for the years 2014–2020 was indicated as the second priority “High-quality human resources”. A special measure in the above mentioned strategy is oriented on innovation education for SME. The objective is to provide education and training to firms and entrepreneurs in the area of innovation activities. The reason for the adoption of this measure is a low level of innovation activities and creativity of businesses with SME falling in the category of low innovative enterprises (this is also about the motivation of employees to develop innovation activities). A series of special training courses on innovative activities and special practices and procedures has to be organised under this measure. Educational activities have to be carried out in cooperation with cluster organisations, industrial chambers and associations operating in Slovakia, as well as with higher territorial units and municipalities.

According to results of our research *the absence of cooperation with other subjects in the field of innovation activities* could be included into the group of averagely significant barriers. Slovak enterprises are dependent on innovation cooperation. When we look into the indicator of innovative SME collaborating with others the value of this indicator was in the year 2014 only 65% of the average of EU member states. As barriers to cooperation within the SME subjects is in many cases lack of interest, low motivation, insufficient financial sources and communication problems. The necessity to develop innovation activity calls for the cooperation in this area. The cooperation of SME with other subjects in the field of innovation activities brings several synergic effects to the enterprise (Kressel,

Lento 2012). The most important of them is common sharing of knowledge and simpler approach to the latest know-how, common sharing of capacities, lower demands for financial sources, etc.

## Conclusions

Small and medium enterprises sector is of paramount importance to improve innovativeness of the entire economy. Given the range of main barriers that have considerable restricting effect on innovation activities of SME, actions need to be urgently identified to overcome the barriers.

In the following part we conclude briefly results of the research aimed at identification of basic presumptions for the development of innovation activities in the SME in Slovakia. We aimed at inside and outside pre-conditions and by means of questions in the separate part of the questionnaire we revealed their importance for small and medium-sized enterprises. Through the analysis we summed them up as follows.

To the question, which basic presumptions have to be fulfilled so that the enterprises could realize the innovation activities, SME stated these 6 basic presumptions.

1. The main presumption that was stated by the respondents is the *sufficient financial sources*. The enterprises declared the need to simplify the approach to financial sources, liquidation of huge administrative demand and bureaucracy connected with acquiring financial means from the European funds (structural funds) or from other public sources. For the future it will be necessary to mobilise all financial sources in the area of innovation support in order to ensure that innovation activities performed by business entities receive the same level of funding as those in advanced EU countries. In connection with efforts towards the most effective use of allocated financial resources, an indirect state aid has to be provided to profit-generating projects implemented by SME, i.e. financial engineering instruments such as guarantee funds, credit funds, venture capital funds and municipal development funds. There is an enormous interest of responsible institutions in coordination with the Ministry of Finance of the Slovak Republic to apply the upgraded model of usage of innovative financial tools in order to support innovation activities in SME. To support the financing of innovations the situation could be changed not only by one way financial support from state budget, but we see the solution also in overall improvement of the business environment (for example through a reduction of indirect taxes – especially VAT rate, in reduction of contribution to social and health insurance companies and in all other areas mentioned above).
2. As the second presumption for the development of innovation activity was stated the *cooperation and participation of SME in networks and clusters*. Positive examples from EU countries confirm, that the participation of small and medium enterprises in networks and clusters, support of partnership's building is the way, how to involve small and medium enterprises into innovation activities. Innovation process of a higher level calls for improvement of interaction between small and medium enterprises, research institutions and universities and for creation of various effective networks and partnerships (Lesáková 2009). Building partnership is a way how to be involved into innovation activities. In the Innovation strategy of the SR for the years 2014–2020 was indicated as one of the main measures the support to innovative industrial cluster organisations. The purpose is to improve competitiveness through support to selected activities of industrial cluster organisations with a view to promote joint industrial activities in selected areas (Ministerstvo hospodárstva SR. 2014). It could help to support cluster activities which contribute to increasing the competitiveness of the innovative cluster member companies.
3. As important presumption to develop innovation activity was indicated the *high-quality human resources*. Quality management, as well as employees able to think creatively and to implement innovations in their activities, represent one of the most important presumptions of the development of innovation activity of an enterprise. Management must be able to lead and direct the thoughts and ideas in the enterprise, to search and use talents, be aware of the fact that the enterprise will be successful due to being distinguished by the human resources (Frappaolo 2006). From the viewpoint of employees pro-active approach is expected, as well as the ability to learn and implement knowledge in the innovation activity. Remuneration of employees for their innovation ideas is a significant motivator and presumption for the increased effort of employees when searching for new, innovative solutions (Lesáková 2009).
4. According to our survey results, the fourth presumption is the suitable proinnovative environment. It is necessary to create an *innovative environment* in the SR that eliminates weaknesses in the area of research and innovation (R&I) and develops opportunities which create conditions for fundamental enhancement of innovative environment. Of special importance is the development of institutions supporting innovation activities on national and regional level. A critical element is above all the autonomous functioning of sectors of education, R&I and business practice, which results into different understanding of R&I. Of special importance is the creation of linkages between multinational corporation's R&I and domestic businesses R&I framework (including the SME), and increasing interest of businesses and industrial clusters in rebuilding of industrial R&I structures (entities). Successful implementation of innovation strategy requires a structural change of current competencies in the management of research and innovation in the SR and a principle manoeuvre in cultural

change of innovative environment. According the research results government should pay much more attention to elimination of administrative barriers and create a systematic institutional support to SME on national and regional level.

5. SME's managers agreed on the fact that without *well created vision and clearly formulated aims* the innovation activity in SME is limited. The pre-condition for clearly formulated aims is the vision corresponding to the possibilities of an enterprise and responding to the situation on the market. Clear vision is a strong predictor of the success (Wagner, Hollenbeck 2012).
6. The important pre-condition identified on the basis of responses is the *willingness of enterprises to innovate*. This is inevitable, even if it is connected with certain risk. At present many innovative SME are successful and perspective, and vice-versa many enterprises without innovative activity are getting into financial problems. The willingness to innovate should be accompanied by such an environment that will support the rise of innovation activities (Lesáková 2013). Due to this fact innovation activities may be introduced faster and at the same time several barriers that could retard the rise of innovation activities could be limited.

In today's entrepreneurial practice innovations must be natural part of any entrepreneurship. Permanent and regular innovation is becoming a competitive necessity; to be successful in the future requires interrupting conventions. There is a time of changes and the only way how enterprise can be successful is to accept these changes, adapt to them and utilize them.

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