
Competition Instruments Applied by Large Enterprises during the Crisis Triggered by the COVID-19 Pandemic

Submitted 07/03/21, 1st revision 09/04/21, 2nd revision 02/05/21, accepted 25/05/21

Joanna Duda¹, Anna Wolak-Tuzimek², Łukasz Wójtowicz³

Abstract:

Purpose: This paper is intended to examine the effects of the crisis that was caused by the COVID-19 pandemic on the selection of instruments of competition used by enterprises. A research hypothesis (H1) is advanced: at the time of the crisis that was caused by the COVID-19 pandemic, enterprises have employed new key instruments of competition in order to attain a better competitive standing in the market. The concept and nature of competitiveness are discussed, and instruments of competition are detailed as a dimension of competitiveness.

Design/Methodology/Approach: The theoretical section of the paper is based on a comprehensive review of leading specialist literature. The hypothesis is verified by means of exploratory factor analysis, which serves to detect an optimal group of main factors and explicate correlations between observable variables. The number of factors is determined using the Cattell's scree criterion and Kaiser criterion.

Findings: The paper contains the results for a group of 253 large Polish enterprises. A factor-based model of competition instruments that have been used by enterprises at the time of the crisis that was caused by the COVID-19 pandemic is constructed by using exploratory factor analysis. Three factors are defined: the product, quality, and distribution that are currently being applied by enterprises. Distribution is identified as a new key instrument of competition, while the utilisation of Internet channels allows for maintaining one's competitive status in the market.

Practical Implications: The results may be taken advantage of by entrepreneurs. They constitute indications for selecting competition instruments during the crises.

Originality/Value: The paper contains the authors' original research into a representative group of large enterprises that can be generalised to the entire population assuming a level of confidence of $\alpha = 95\%$ and maximum error of $\beta = 6\%$.

Keywords: Competitiveness, enterprise, crisis, COVID-19.

JEL codes: L23, C38, O31, M21.

Paper type: Research article.

¹Corresponding author, Assoc. Prof., AGH University of Science and Technology, Faculty of Management in Krakow, Poland, ORCID: 0000-0002-4349-6179, aduda@zarz.agh.edu

²Assoc. Prof., Kazimierz Pulaski University of Technology and Humanities, Faculty of Economic and Finance, Radom, Poland, ORCID: 0000-0002-2998-909X, awt@uthrad.pl

³PhD Kazimierz Pulaski University of Technology and Humanities, Faculty of Economic and Finance, Radom, Poland, ORCID: 0000-0003-3426-8550, lwojtowicz@uthrad.pl

1. Introduction

The COVID-19 coronavirus pandemic began its active global spread in early 2020. The situation was particularly difficult in Italy, Spain, China, Iran, South Korea, and the United States. It developed very fast, bringing grave changes that affected various areas of society, state, and business as a consequence (Starostin *et al.*, 2020, p. 531). Studies concerning the impact of the COVID-19 pandemic on the market behaviour of consumers (Ahmed *et al.*, 2020; Khan *et al.*, 2020), the insurance market (Kizielewicz, 2020), the global stock markets (Khatatbeh *et al.*, 2020), the operation of the tourist sector (Bera *et al.*, 2020), the enterprise activities (Banaszyk and Gorynia, 2020; Grima *et al.*, 2020), and the government actions in respect to public aid for enterprises and households and the overall condition of public finances (Spoz *et al.*, 2020) have been published in recent literature.

Banaszyk and Gorynia (2020) believe that the COVID-19 pandemic is extraordinarily important, unusual, and exceptional – it applies to virtually all of the global economy and displays an unprecedented or nearly unprecedented force, an unusual distribution over time (the scenario of spreading across various parts of the world), a moderate diversity of the anticipated duration, significant variability in its impact, and epidemiological, economic, and social effects.

The COVID-19 pandemic has required enterprises to take a variety of actions in order to maintain their existing competitive standing. To this end, enterprises should achieve a competitive advantage over their rivals in selected market niches or segments. This advantage is commonly founded on a range of competition instruments and means that are consciously created by enterprises to attract clients for their current or projected (future) offers.

The challenges that are currently facing managers include the ability to correctly diagnose and anticipate the processes and developments in their changeable environment. The crisis has enhanced the extent and rate of transformations that force enterprises to resort to new instruments of competition in order to gain improved competitive standings in the market. Chisholm-Burns (2010) affirmed that a crisis creates opportunities and accelerates the implementation of new solutions. Ritter T. and Pedersen C. (2020, pp. 214-224) offered and proved the hypothesis that a crisis influences the changes of enterprises' business models.

A research hypothesis (H1) is advanced, therefore, enterprises have employed new key instruments of competition in order to attain better competitive standings in the market at the time of the crisis that was caused by the COVID-19 pandemic. This paper is intended to examine the effects of the crisis that was caused by the COVID-19 pandemic on the selection of instruments of competition used by enterprises. The results for 253 Polish enterprises and an exploratory factor analysis are utilised to verify the research hypothesis. Statistica 12 software serves as the tool for our data analysis.

2. Instruments of Competition as Dimension of Enterprise Competitiveness

The notion of competitiveness is commonly used in present-day economics, albeit without a clear definition or interpretation. A universally acceptable (or consensual) definition of this category is absent; this is partly due to the fact that competitiveness can be studied at several different levels: of a country, region (Amaral and Salerno, 2019; Simionescu, 2016), sector, industry (Bednarz, 2013; Marakova *et al.*, 2016), clusters (Ryzhkoval and Prosvirkin, 2015), and enterprises (Kuźmiński *et al.*, 2020; Shevchenko, 2019; Poufinas *et al.*, 2018), all while using a broad range of measures and indicators.

In the opinion of Cherepa (2014), competitiveness cannot be studied in abstraction from objects like a products, enterprises, industries, regions, or countries. On the one hand, the competitiveness of a state or industry depends on the capacities of certain raw materials manufacturers to make competitive products. On the other hand, however, competitive products can be made under the conditions that are provided for manufacturers in an industry or in a country as a whole. Product competitiveness determines enterprise competitiveness, its financial-economic condition, and goodwill to a large extent. This is only possible, however, if it brings the most revenue and most profits in the structure of the competitive products sold. There is a rather clear and simple notion of competitiveness at the enterprise level that is based on a firm's ability to compete, grow, and generate profits. It consists of a firm's capacity for the consistent and profitable manufacture of products that meet open market requirements in terms of pricing, quality, etc., (Sipa *et al.*, 2015).

At present, an enterprise's competitiveness means its ability to supply the appropriate products or services with adequate quality at the right time and place so that customer needs are satisfied more efficiently and effectively than they are by other enterprises (Kraszewska and Pujer, 2017), an enterprise's ability to discover changes inside and in its environment by continuing to improve its market competitiveness criteria as compared to its rivals (Nemethné, 2010), the quality that enables an entrepreneur to successfully compete against other market players (Suchanek *et al.*, 2011, p. 120), and an enterprise's ability to design, produce, and sell better products and services than those offered by its competitors with regard to price and other qualitative criteria (Ambastha and Momaya, 2004, p. 47). Competitiveness is ambiguous, multi-level, and multi-dimensional, it is a complex phenomenon (Nowak *et al.*, 2020; Giap *et al.*, 2017) that contributes to the decomposition and definition of the elements of the enterprise competitiveness system. Stankiewicz (2005, p. 89) distinguished four subsystems of competitiveness:

- Competitive potential, or all of the fixed and intangible resources of an enterprise that are necessary for operation in the competitive market;
- Competitive advantage, defined as such an effect of competitiveness potential (including environment conditions) that allows for the effective generation of attractive market ranges and effective instruments of competition;

- Instruments of competition, which can be defined as means that are consciously created by enterprises to attract clients to their current or projected (future) offers;
- Competitive standing, which is understood as an enterprise's performance at competing in a given sector as compared to the performance of its competitors.

An analysis of links among the dimensions of competitiveness indicates that the achievement of a desired competitive standing is conditioned by the competitive advantage that is in place, which in turn is dependent on the competitive potential that is available to an enterprise. An entity's resources and skills influence the preparation of the product range that is to be evaluated by the market and that allows for a competitive advantage. Instruments of competition should be chosen following a detailed analysis of an enterprise's competitive potential and the environment in which it operates. Only after applying the appropriate instruments of competition can certain competitive standing be acquired.

The specialist literature sees instruments of competition as methods of customer acquisition and goodwill creation; e.g. quality, product pricing, flexible product customisation (Jabłońska-Porzuczek and Smoluk-Sikorska, 2016, p. 103), tools and methods of acquiring customers and suppliers on those terms and conditions that enable an enterprise to reach its goals (Roszyk-Kowalska, 2006), and the means that are consciously created by a firm to find clients for its existing or projected offers (Gorynia *et al.*, 2009).

Stankiewicz (2005, p. 243) claimed that instruments of competition vary depending on the competitive field in which an enterprise operates. He distinguished three arenas of competition. The first is an 'inputs' arena at the time that decisions are made to start and launch a production in a market – these are the processes of creating the conditions for starting an operation. The second arena is present 'at the outputs', with an enterprise as a supplier of products/services – actions are taken to affirm the value of the products offered to customers. The third and final arena is the market competition of enterprises, which involves their increasing numbers – in this case, enterprises attempt to 'sell themselves' to potential partners and gain investors.

Across all of these arenas, an enterprise tries to uphold its strengths and present itself as a good choice. In the arena of 'inputs' competition, instruments of competition are applied to maximise the effectiveness of resource acquisition and, thus, of the highest ratio of resource value to their evaluation. In the arena of 'outputs' competition, maximising the income from the sales of products/services is the overall objective of competition instruments, while maximising the usable and emotional value and minimising any potential adverse responses to pricing are the principal goals. The market of enterprises is the third arena where an enterprise functions and where interactions take place. It is here where enterprises seek the support of investors and/or shareholders.

In the process of competition, an enterprise employs instruments that are designed to sell the ranges that are offered to the market. To fulfil this role, they should be well-adapted to and match the offer in which an enterprise desires to interest any potential customers. Such actions bring a better competitive standing in the market when compared to one's competitors.

3. Methodology

A survey of large enterprises active in the Polish economy was undertaken in March 2020. The date was intentional, as the economy went into lockdown at the time. The sample was selected at random, 1,600 enterprises were chosen from the population in such a way that ensured that each unit in the general set was guaranteed equal opportunity for being sampled. In all, 253 enterprises completed their surveys correctly. Assuming a confidence level of $\alpha = 95\%$ and a maximum error of $\beta = 6\%$, the results of the analysis are representative of the general population. The empirical study utilised an original survey questionnaire that consisted of two parts, particulars, and questions. The answers to the questions were generated by means of computer-assisted telephone interviews (CATIs).

The data obtained in the first part of the survey suggested that limited liability and joint-stock companies were the key forms of organisation; these accounted for 68% and 21% of the total enterprises examined, respectively. In addition, 118 enterprises (approximately 47% of all of the firms) engaged in trade and services. The fewest enterprises dealt in consumer goods and the extraction of fuels and power generation (2.4% and 2.8%, respectively). A majority of the enterprises surveyed were based in the Mazovian (46) and Silesian (34) regions, their shares amounted to 18.2% and 13.4%, respectively. On the other hand, the fewest firms (6) were examined from the Lubuskie region. More than 75% of the studied enterprises had implemented CSR and used ERP III integrated information systems in their businesses.

The second part of the survey was comprised of six questions, with responses recorded on ten-point ordinal scales. The results that were generated for the request of *“Please determine the significance of the selected instruments of enterprise competition during the crisis that was caused by the COVID-19 pandemic on a scale of 1 to 10, where 1 stands for a low significance and 10 for a high significance”* are reported in this paper. Thirteen factors/observable variables were examined; i.e., quality of product/service (V1), quality of support (V2), method of distribution (V3), advertising (V4), enterprise image (V5), terms of payment (V6), product brand (V7), product price (V8), innovative activities (V9), extent of product range (V10), matching of product structure to structure of consumer demand (V11), availability of products (V12), and customer trust (V13).

The hypothesis is verified by means of an exploratory factor analysis, which serves to detect an optimal group of main factors and explicate the correlations among the observable variables. The method helped us reduce the variables, detect the structures

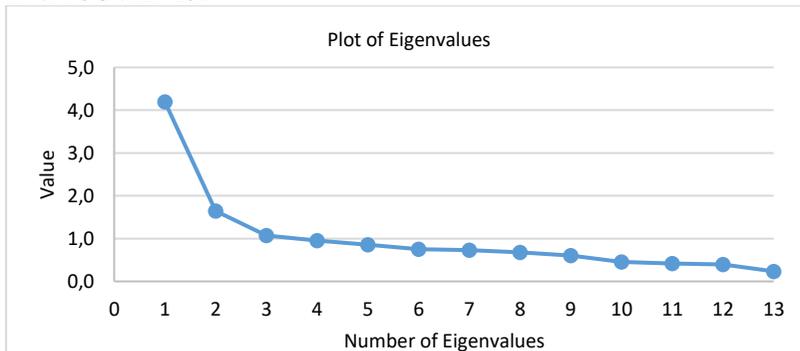
and general regularities among the variables, verify the regularities and links, and describe and classify the objects in new orthogonal spaces that were defined by new emergent factors (Stanisz, 2007, p. 166).

The procedure of the factor analysis continued to define the factors that made the maximum number of contributions to the explication of the variability. To this end, the initial space was rotated in accordance with the varimax criterion. A regression line was plotted in space that maximises the variance (variability) of the first factor while minimising the variances around it. The defined factor had the greatest eigenvalue (variance) or explained the most variability of the studied phenomenon. Each subsequent factor determined most of the remaining variability that was not covered by a preceding factor. The number of factors is determined by using Cattell's scree criterion (1966) in the form of a linear diagram (where a point needs to be found to the right of which the eigenvalue begins a gentle descent) and a Kaiser criterion (1960). According to this, only those factors that corresponded to eigenvalues above 1 were utilised. Statistica 12 software was employed as the tool of data analysis, and an MS Excel 2016 spreadsheet served as support.

4. Results

In accordance with Cattell's scree criterion, the number of factors was determined by finding a point at which the diagram begins to 'flatten out'. The diagram was observed to become flat after passing Factor 3 (compared to the initial components), where the eigenvalue displayed a 'steep descent'. Accordingly, a three-factor solution was adopted (Figure 1).

Figure 1. Diagram of eigenvalue scree for instruments of enterprise competition dependent on COVID-19.



Source: Authors' own research.

The eigenvalues for the three factors that were selected for the continued analysis were within a range of $\langle 1.10; 4.20 \rangle$. The accumulated eigenvalue for the three chosen factors was 6.92; this means that this system of factors explains 53.20% of the total variance and the resultant model matches the reality studied well (Table 1).

Table 1. Matrix of eigenvalues for factors describing instruments of enterprise competition.

Factor	Characteristic value	Percentage of general variance	Accumulated characteristic value	Accumulated percentage
F1	4.20	32.27	4.20	32.27
F2	1.65	12.67	5.85	44.94
F3	1.07	8.26	6.92	53.20

Source: Authors' own research.

In order to generate a simple structure of factors, the matrix of the factor loading was subject to Varimax rotation, which helped to simplify the interpretation of the factors by minimising the number of variables needed to explicate a given factor. Table 2 includes a matrix of the factor loads for the factors that describe the instruments of enterprise competition; that is, the correlation between the observable variables and the factors introduced by the model. The minimum value of the correlation that qualifies as significant is assumed to be 0.7.

Table 2. Matrix of factor loads for factors describing instruments of enterprise competition.

Factor loads (normalised Varimax) Principal components (loadings are greater than 0.7)			
Variable	F.1	F.2	F.3
V.1	-0.04	-0.85	0.08
V.2	-0.04	-0.78	0.12
V.3	0.13	-0.13	0.80
V.4	0.68	0.10	-0.17
V.5	0.22	0.06	-0.64
V.6	0.60	0.16	0.14
V.7	0.67	0.39	0.05
V.8	0.61	0.00	-0.18
V.9	0.61	0.21	0.02
V.10	0.77	-0.14	0.05
V.11	0.77	0.03	0.08
V.12	0.71	0.00	-0.15

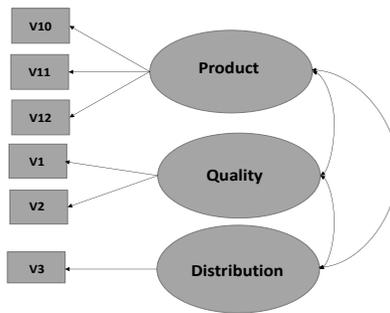
Source: Authors' own research.

Those values that were in excess of 0.7 of the variables that loaded the particular factors are shown in bold in Table 2. The first factor (F.1) explains 32.27% of the total variance and is represented with three variables numbered 10, 11, and 12; that is, the

extent of the product range, the matching of the product structure to the structure of consumer demand, and the availability of the products. Factor 2 (F.2) explicates 12.67% of the total variance and is represented with two variables numbered 1 and 2; namely, the quality of product/service, and the quality of support. The third factor (F.3) explains 8.26% of the total variance and is represented with a single variable numbered 3 (or the method of distribution).

As suggested by the literature, the factor names are assumed to be derived from the variables' names with the maximum factor loads or from a shared characteristic. Thus, Factor 1 is termed 'product', Factor 2 – 'quality', and Factor 3 – 'distribution'. Based on this terminology, a model that presents the instruments of competition employed by enterprises during the time of the COVID-19 pandemic is constructed and shown in Figure 2.

Figure 2. Factor-based model of enterprise competition instruments.



Source: Authors' own research.

The individual observable variables (the positions on the scale) in Figure 2 are represented by rectangles, and the factors are represented by ovals. The cause (regression) relationships are shown with unidirectional arrows, and the correlation dependencies are indicated with bidirectional arrows.

5. Discussion

The enterprises that have remained active during the crisis that was triggered by the COVID-19 pandemic have experienced both supply and demand shocks. The supply shock has been caused by the breaking of global chains of supply and the disrupted provision of materials, which have resulted in interruptions of manufacturing and, consequently, of the normal distribution and sales of goods. The demand shock, meanwhile, stems from the imposition of lockdowns (among other things), which has contributed to a considerable decline in stationary shopping. Under these

circumstances, the materials and intangible resources of enterprises as well as the key competencies and abilities that are required to operate in the competitive market may be expected to change. In effect, enterprises have been forced to apply new instruments of competition in order to maintain their competitive standings in the market.

Following on a survey of 253 large enterprises in the Polish economy and the application of exploratory factor analysis, a factor-based model of competition instruments was developed that has been employed by enterprises during the time of the crisis that was caused by the COVID-19 pandemic. Three factors have been defined: product, quality, and distribution. The first factor is 'loaded' by three observable variables; namely, the extent of the product range, the matching of the product structure to the structure of consumer demand, and the availability of products. Factor 2 is 'loaded' by two observable variables (i.e., quality of product/service, and quality of support), while the third factor is loaded by one observable variable – method of distribution. The results show that it is the product, quality, and distribution that are the statistically significant instruments of competition that have been used by enterprises during the COVID-19 pandemic.

The specialist literature contains results that confirm that product and quality are systematically used as instruments of competition that contribute to attaining a competitive advantage in the market and of a competitive standing (Wolak-Tuzimek and Tuzimek, 2019; Sigalas, 2015; Ismail *et al.*, 2010; Huff *et al.*, 2009; Giménez and Ventura, 2003; Fahy, 2002).

In turn, the importance of distribution as an instrument of competition has risen during the period of the crisis. A number of enterprises found that the diversification of distribution channels can become a source of a competitive advantage. Unfortunately, most enterprises had only used the traditional channel prior to the pandemic. The use of Internet channels of distribution is now necessary for the success of an enterprise. They help cut the costs of an enterprise's operation, reach a broader range of customers, and contact customers on an individual basis. Enterprises that were faster to employ Internet channels gained an advantage over their competitors. This implies that methods of distribution are a new instrument of competition that have been used by enterprises during the time of the crisis, which verifies the research hypothesis during the time of the crisis that was caused by the COVID-19 pandemic, enterprises have employed new key instruments of competition in order to attain better competitive standings in the market.

Juchniewicz's (2014) study of 87 businesses in the Warmińsko-Mazurskie region of Poland implies the application and significance of the particular instruments of competition may be connected with the size of a business. The quality and price of a product/service are regarded as the most common instruments of competition that have been used by small, medium-sized, and very large entities. The range of the competition instruments that were in place in small businesses was the most extensive.

They focused on matching products to customer requirements and providing convenient access to products in their competition. These were followed by such instruments of competition as terms of payment, terms and periods of guarantee, company images and product brands, the diversification of product/service ranges, sales promotion and the launching of new products, advertising, and a range of after-sales services. Medium-sized entities applied similar instruments as small businesses did (though in a different order). For large companies, matching products to customer requirements followed by price of product/service and convenient access to products were the key instruments of competition. Surprisingly, a major instrument (that is, the quality of a product/service) ranked low in this group of businesses.

Zastempowski (2010) published his results concerning the application of competition instruments by enterprises during the time of the credit crunch. His study covered 133 enterprises that were based in the Kujawsko-Pomorskie region of Poland and active for a minimum of three years in the market. The author defined the contemporary instruments of competition that he had addressed in his research. His respondents assessed the frequency of the instruments analysed on a four-point scale (0 – never; 1 – rarely; 2 – occasionally; 3 – systematically). The results indicated that, out of 30 possible instruments of competition, a mere 5 were employed systematically at the time. The majority of the examined enterprises (more than 65%) said that they systematically resorted to relying on close contact with customers as their preferred instrument of competition. Flexible adjustments of products toward customer needs came in second (62% of those queried), followed by the careful keeping of delivery times (nearly 62%), quality of products (57%), and pricing (52%)

The results affirmed that the quality of the goods produced and flexibility shown as the adjustment of products toward customer requirements were the instruments of competition that were frequently applied by enterprises. The channels of distribution, meanwhile, are a new key instrument that has been important during the time of the crisis arising from the COVID-19 pandemic.

6. Conclusion

A well-managed enterprise is first of all distinguished by its flexibility and ability to adapt to changing conditions (including the fluctuating structures of consumer demand and consumer requirements toward the quality of the goods produced). The results of the authors' study of 253 large enterprises that are active in the Polish economy and the instruments of competition they have employed during the time of the crisis that was triggered by the COVID-19 pandemic suggest the following conclusions:

1. The crisis has affected the selection of competition instruments by enterprises. Specialists list such instruments of competition as the quality of goods, quality of support, product range structure, and adjustment of the product structure to the structure of demand. Only during the crisis did enterprises begin to utilise access

to channels of distribution as an instrument of competition. By applying Internet channels of distribution, they were able to preserve or even improve their standings in the market.

2. Based on the results and an exploratory factor analysis, a factor-based model of competition instruments that have been used by enterprises during the time of the crisis was constructed. Three factors were distinguished (namely, product, quality, and distribution) that can be treated as statistically significant. This means that the respondents introduced a new instrument of competition (channels of distribution) in addition to such traditional instruments as quality and product, which corroborates our research hypothesis that, during the time of the crisis that was caused by the COVID-19 pandemic, enterprises have employed new key instruments of competition in order to attain better competitive standings in the market.

The challenges that currently face entrepreneurs are comprised of the skill to properly diagnose and anticipate the processes and phenomena that are emergent in the market. It cannot be doubted that the impact of the crisis has increased the extents and rates of the transformations in enterprises. A crisis frequently accelerates the introduction of changes; this is also reflected in the decisions to select instruments of competition. The conclusions offered in this paper are indications for entrepreneurs that concern the application of new key instruments of competition that may help them attain better competitive standings in the market during times of crisis. At present, applying the competition instruments of access to distribution channels provides the use of Internet channels that can help a company reach a broader range of customers than via traditional channels of distribution, engage in trading 24 hours a day, reduce existing costs, and build an image of a modern business that is based on new technologies. As a result, one's competitive standing in the market can be preserved or even improved.

The authors plan to continue their research into identifying factors of enterprise competitiveness in their four dimensions; i.e., the competitive potential of an enterprise, a competitive advantage, instruments of competition, and the competitive standing of an enterprise at the end of the COVID-19 pandemic

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