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From the Editorial Committee

We are giving you the next Vol. 26, No. 4(2021) issue of the Quarterly of the Faculty of Management of the Rzeszow University of Technology entitled “Modern Management Review”.

The primary objective of the Quarterly is to promote publishing of the results of scientific research within economic and social issues in economics, law, finance, management, marketing, logistics, as well as politics, corporate history and social sciences.

Our aim is also to raise the merits and the international position of the Quarterly published by our Faculty. That is why we provided foreign Scientific Council, as well as an international team of Reviewers to increase the value of the scientific publications.

The works placed in this issue include many assumptions and decisions, theoretical solutions as well as research results, analyses, comparisons and reflections of the Authors.

We would like to thank all those who contributed to the issue of the Quarterly and we hope that you will enjoy reading this issue.

With compliments
Editorial Committee

Ayman BALAWI¹
Esther W. WACHIRA²

HRM PRACTICES ON FOREIGN-OWNED COMPANIES IN HUNGARY

This paper sought to answer the question of how best human resource practices can support organisations in the current phase of internationalisation while still maintaining the local standards of the hosting country? In attempting to answer this question, the paper studied the HRM practices of Foreign-Owned Companies and Hungary's Socioeconomic environment. The study revealed that the Hungarian cultural society was more independent, and power hierarchy was not entrenched in the organisational cultures, highly individualistic, masculine, intolerant towards taking risks, realistic, and culturally restrained. The paper concluded that the increased FDIs and multinational companies in Hungary posed a great challenge to employees' effective and efficient management while still maintaining the host country's local standards.

Keywords: international HRM; labour markets; foreign direct investments; foreign-owned companies, Hungary.

1. INTRODUCTION

Currently, the business environment is faced with globalisation and technological changes. These changes make the management of companies more uncertain and complex (Chegri et al., 2021). Additionally, human resource management's vibrancy and globalisation have set off activities targeting human resource management at the international level. Employees have agreed to work away from their home countries, and organizations have worked hard to meet their goals in order to gain a competitive advantage. Consequently, International Human Resource Management (IHRM) has gained popularity in handling human resources at multinational companies (MNCs) through recruiting, training, and performance appraisal. However, Thill et al. (2016) argue that human resources management has become more complex and could influence employment instability. This is due to the different approaches and practices of human resource management, causing differences between foreign-owned and domestically owned companies. Conditions such as the host country's culture, the product's size, and national

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policies for the product may force the MNCs to develop and adopt different corporate strategies that align with the local host country's (Poór et al., 2017; Radulescu et al., 2019). Subsequently, this leads to the question of how best human resource practices can support organisations in the current internationalisation phase while still maintaining the local standards of the host country.

Internalisation of organisations attributes the competitiveness of businesses to managing employees and the development of HR functions. A greater degree of qualified top management involvement is a significant concern to maintain a locally and internationally competitive advantage (Bembenek, 2014). Moreover, organisations aiming to invest across boundaries now assume strategic importance in employing the right people in suitable positions, which is instrumental in the organisation's strategies, performance, and growth. Thill et al. (2016) posit that the role of human resource management in foreign companies covers the strategy dealing with executing organisational strategies and objectives, considering the host country's cultural influences.

1.1. Development of HRM

Historically, the idea of human resource management was developed and adopted as early as 1980 in North America. After the fall of the socialist system in Europe, EU countries, especially from the east, were faced with the challenge of skilled workers' migration to Western European countries. Hence, there was a shortage of managerial, trained professionals, and skilled workers. During this period, Western Europe attached importance to human resource management due to a lack of comprehensive systematic personnel functions (Scullion et al., 2007; Karoliny et al., 2009). In the '90s, most CEE countries emphasised the concept and practice of human resource management under the state's watch. Therefore, the personnel department consisted of two sections headed by the personnel manager and the finance director (Thill et al., 2016). This meant that all issues related to the employees, including their welfare, promotion, and recruitment to management positions, were closely monitored by the government, as back then, human resource management was not regarded as a profession (Mazur, Walczyna, 2020). Morley et al. (2016) argued that this management mode was not favourable to the economy's growth as it did not follow free-market principles.

The business environment and labour markets have witnessed a notable change in former socialist countries' business and human resource management practices. The entry of multinational corporations shaped domestic human resource management by introducing basic salary systems, as well as the learning and acceptance of foreign languages and cultures. However, during the initial stages of HR development, the local markets could not fulfil the HR needs and capacity anticipated by international companies. Poór et al. (2015) argued that the implications of HRM practices vary in different countries due to different traditions, cultures, political stability, and economic development. Thill et al. (2016) further supported this view and hypothesised that human resource management is implemented and performed differently in different countries, even in the European Union.

In Hungary, during the socialist era, most of the key positions in organisations were kept under the keen eye of the Hungarian Socialist Workers Party and the state bureaucracy (Wolfe, Poór, 1992). According to Michael et al. (2016) and Poór (2009), by the year 2005, Hungary had entirely accepted the concept of human resource management and had begun designing HRM strategies with major decision-making being the responsibility of line managers. Additionally, foreign-owned companies' entrance forced the local companies to

be less politically oriented; hence, human resource management became crucial. The multinational companies used their advantage of resources over the local companies, thus changing local business systems.

1.2. Concept of International HRM

International human resource management has grown significantly over the past few years as a result of globalisation. Collings et al. (2007) posit that this growth can be felt through its empirical and theoretical foundation and practical application. Björkman and Stahl (2006) further suggest that IHRM is a field that is extraordinarily vibrant and prone to continuous development due to new technology and themes that exceed traditional HRM. Stahl et al. (2012) argue that International HRM can be credited to competition in the business environment as global human resource services continue to grow and employees adapt to their services' mobility across borders. Furthermore, innovation and technology are no longer centred in the headquarters but have devolved somewhat to the subsidiary offices. Stahl et al. (2012) defined international HRM as the management of global employees and how it affects their end performance.

Academics and researchers proposed various classifications of international human resource management to distinguish it from local human resource management. De Cieri and Dowling (1999) and Karoliny et al. (2009) outlined three different categories in IHRM, which include the management of human resources in multinational cooperation, the management of different cultural practices and beliefs, and finally, comparative human resource management, which compares HR practices at a national and organisational level. Dowling et al. (2013) broadened the concept of International HRM; he attributes its intricacy to additional human resource services, such as international taxation and language barriers, a broader scope of human resource activities as companies have to design or reorganise their HR programs to fit international standards, professional training and development to enable the expatriate employees to cope, and balancing the workforce in terms of getting a proper blend between the local employees and expatriates. Moreover, it exposes the expatriates to potential risks, such as human and financial risks, and finally, external influences, such as the type and state of government and the economy.

According to Poór (2009), multinational companies are at liberty to opt for various styles of management, such as ethnocentric management, where authorities of the parent company run all the critical managerial positions of a domestic company. Also, polycentric management, where the locals hold managerial positions with limited promotion chances. Region-centric management, where locals hold crucial management positions in their subsidiaries and regional companies, and geocentric management, where locals can hold top management positions in the parent company (Michael et al., 2016).

2. THE LABOUR MARKET IN HUNGARY

The workforce in Hungary is highly skilled and educated. The EU's association strengthens its political and economic steadiness, whereas big global companies' aid has decreased the crisis's impact. The size of Foreign Direct Investments that had surged into Hungary since the beginning of the economic transformation was 86 billion USD by the end of 2009. In ploughed revenues, other contributing interests and working capital investments accounted for 60 billion EUR, while other capital accounted for 4.3 billion EUR (Poór et al., 2017).

The global financial crisis in 2008 had a significant impact on human resource management and practices in Hungary. In response to the direct involvement of HR functions in substituting the less regulated labour force, Individuals with the ability to speak different languages migrated to neighbouring countries since it was easier for multinational companies to substitute between the factors of input. Furthermore, this had a significant impact on industries such as construction, catering, and tourism (Péter, József, 2009; Egedy, 2012). According to the Central Statistical Office in Hungary, there was a slight increase in the labour force between 2015 and 2016. However, employment growth has since reduced, which is attributed to the reduction in the labour force perspective.

Due to technological advancement and dynamic changes, the labour market has shifted towards employing higher-skilled people (Károly, Morvai, 2018). Its effect reflects the expansion in the service industry, which has changed tact through investing in high value-added production (OECD, 2016). Therefore, local and multinational companies need to employ highly skilled labour to sustain growth and remain competitive in the Hungarian market (OECD, 2020).

In a bid to improve the labour force, the Hungarian business environment has witnessed various changes in the legislation concerning its labour market policies (such as the modification of the Vocational and Adult Training Act in July 2018, the HRDOP tender framework, the establishment of women in the family and at work, and the pensioners' cooperatives introduced in 2017). However, despite the various policies by the government, the employability rates in Hungary remain relatively low. According to PwC (2018), shrinking and scarcity in the labour market result from the declining unemployment rate and a lack of qualified personnel suitable for employment (due to skilled labour migration).

The Gross Domestic Product (GDP) in Hungary was worth 165.70 billion US dollars in 2020. Hungary's GDP value represents 0.25 percent of the world economy; it averaged 59.23 billion USD from 1968 to 2018, reaching an all-time high of 158 billion USD in 2008 and a record low of 4.69 billion USD in 1968 (World Bank, 2020; Hungarian Central Statistical Office, 2021).

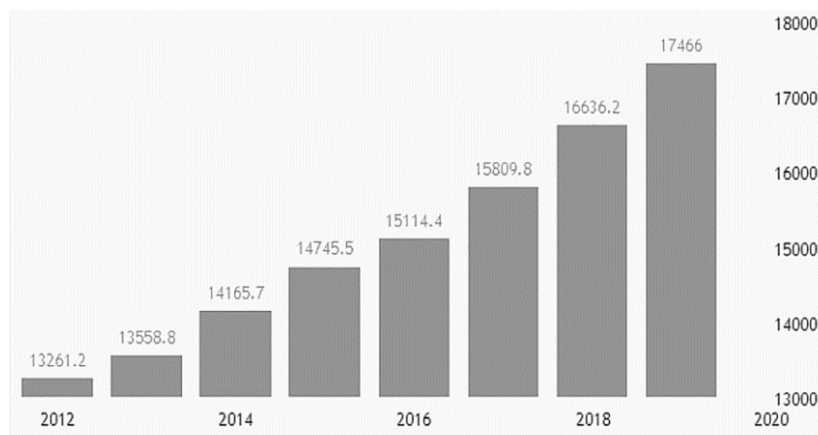


Figure 1. GDP *per capita* in Hungary (2012–2020)

Source: (Hungarian Central Statistical Office, 2021).

Figure 1 shows that the Gross Domestic Product per capita in Hungary reached \$17466 in 2020. Hungary's GDP per capita is 130% of the international average; it also averaged \$11980 from 1991 to 2018, peaking at \$17466 in 2020 (World Bank, 2020; Hungarian Central Statistical Office, 2021).

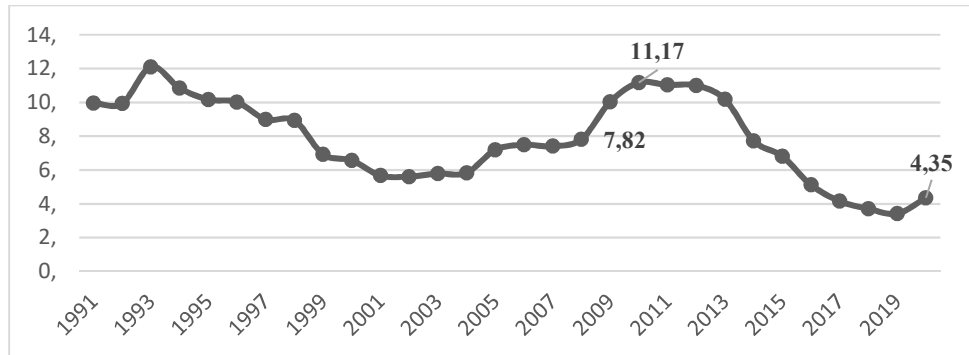


Figure 2. The unemployment rate in Hungary (1991–2021)

Source: (Hungarian Central Statistical Office, 2021).

Moreover, Figure 2 displays a long-term overview of the unemployment rate in the last three decades; it demonstrates that the unemployment rate has increased to its highest level ever after the financial crisis in 2008; it went from 7.82% to 11.17% in 2010. However, the unemployment rate has progressed well in the last six years, reaching its lowest value (3.42%) in 2019. As indicated in the graph, the unemployment level in Hungary was 3.5% in November 2019, which was a 1.1% decline from the previous year. Recently, Hungary's unemployment rate dropped to 4.1% in July 2021, down from 4.6% in the same period the previous year. Meanwhile, youth unemployment has risen to 51,000. Unemployment lasted an average of 8.8 months, and 34.6% of the jobless had been searching for work for at least a year.

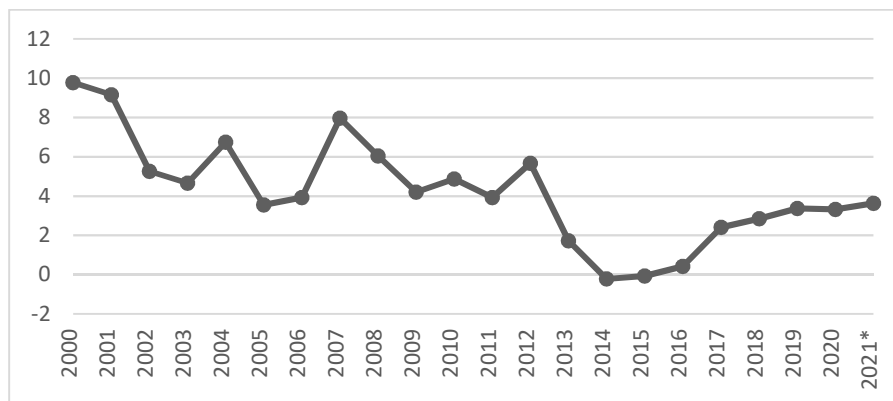


Figure 3. Inflation rate in Hungary (2020)

Source: (Hungarian Central Statistical Office, 2021).

The figure above demonstrates the average inflation rate in Hungary from (2000–2021). In 2018, the average inflation rate in Hungary reached 2.84 percent compared to the preceding year. The figure shows us a close-up overview of the inflation rate in the last year (2019). It reveals that Hungary's inflation rate mounted to 4.0% in December 2019 from 3.4% to November 2019, above market expectations of 3.8%. This rate is the maximum since December 2012 and continued at the top of the central bank's inflation target range, mainly increased by prices of food and non-alcoholic drinks (5.7% vs 5.2%), transport (4.0% vs. 0.1%); alcoholic beverages, tobacco (8.8% vs 8.6%); and recreation and culture (0.9% vs 0.6%). As a result, the main inflation enclosed down to 3.9% from 4% in November. For 2019 the whole year, the average inflation result is 3.4%.

2.1. Female in the Labour Force

According to Fazekas and Morvai (2018), the Hungarian labour reserve (public workers, the underemployed, and the inactive labour force) has been decreasing gradually, making the female labour force the lowest compared to other EU countries. This can be attributed to lower employment rates of women with children under six years of age and the entailment of full leave and other maternity benefits that can last for three years. It is difficult for women with young children to engage in meaningful employment due to the rigid hours of operation of preschools.

According to the OECD (2020), implementing flexible conditions such as flexible working hours will benefit both employees and employers. In addition, the government has incorporated incentives such as lowering social security contributions, maternity benefits, and the exception of working on a part-time basis for working mothers, a move that organisations should emulate.

3. HUMAN RESOURCE MANAGEMENT PRACTICES IN MULTINATIONAL COMPANIES IN HUNGARY

Globalisation has had remarkable developments in the complex, dynamic, and diverse international business environment, increasing the consciousness of the importance and critical aspect of the global workforce's management (Stahl et al., 2012). Venegas et al. (2016) argue that international companies' competition leads to the globalisation of the business views in terms of management and integration while still adhering to the local business environment, policies, and practices. Hence, companies with a global network need to employ qualified and competent employees ready to face new challenges and quickly adapt to new environments (Mulang, 2015). International HRM focuses on MNCs' attempt to influence people's work in their operations across borders, and globalisation presents new and significant challenges for managing and regulating work on an international basis.

3.1. Personnel Management and Corporate Culture

Large multinational corporations (MNCs) employ 35% of the private sector workers in Hungary and generate 60% of GDP and 65% of exports. There is a lack of understanding about MNC collective bargaining.

Nowadays, Hungary has over 110 international and regional business centres, hiring over 46,000 people in the industry. Businesses provide a very motivating work environment: workers have the opportunity to work in contemporary offices equipped with

cutting-edge technology. While competence in English is a must for employment in the field, knowing a second foreign language is also frequently required. Daily use of foreign languages is not only required by the nature of the business but is also frequently the case while talking with international team members; Additionally, excellent language skills (possibly more than one), and in some circumstances, a graduate degree. Also, colleagues from other regions work together in teams, providing a productive work atmosphere that allows for insight into one another's daily routines.

Furthermore, the most significant component of the recruiting process is the existence of specified competencies. Strong communication skills, the ability to operate in a team and individually, punctuality and accuracy are among the most crucial attributes. Depending on the task at hand, there may be a variety of resources to deal with, which necessitates the use of a variety of abilities. The individual must also be able to work in an international context, which needs the capacity to prioritise and effectively manage his time.

On the other hand, MNCs set a premium on promoting a positive workplace balance for personnel and accommodating employees with altered working abilities, women's roles, healthy habits, adequate salary and benefits, professional and soft skills training, and career advancement. Flexible schedules are also enticing, with certain professions allowing employees to choose when and where to work and practically every institution supporting several home-office days.

Furthermore, in general, MNCs train their personnel more thoroughly than their local counterparts. Even though retraining might theoretically increase functional flexibility, Hungarian collective agreements (at both domestic and foreign companies) do not address training strategy. As stated in collective agreements, contracts for individual study exclusively cover the terms and circumstances of assistance (such as paid time off and tuition fees) supplied by the company and the responsibilities of employees who receive that support.

3.2. Social-Economic analysis of Hungary

Host countries' cultures have a significant and crucial effect on foreign-owned companies' human resource practices and management (Keating, Thompson, 2004; Hofstede, 2005). Hence, it is paramount for global business enterprises to consider the population's cultural aspect when developing and implementing organisational goals and strategies. Hungarian culture is quite different from other cultures in the EU and the neighbouring countries regarding interpersonal relations, familiarity, and creativity (Borgulya, 2011; Németh, Vékás, 2019).

This study conducted the cultural analysis of Hungary, identifying disparities in the business environment. Using the Hofstede data, Hungary's business culture indicates how the economy performs in various parameters, namely Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long Term Orientation, and Indulgence. Figure 4 shows the main dimensions.

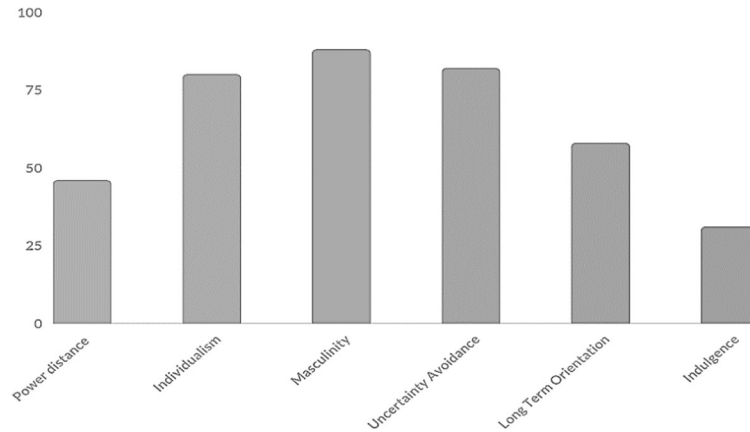


Figure 4. The dimensions of Hungarian culture based on Hofstede's 6-D Model

Source: (Hofstede, 2021).

a) Power Distance

According to Hofstede, power distance emphasises the fairness or the equality of the population in economies with a higher power distance, indicating a large gap between the haves and the have nots in the society and vice versa. Additionally, the less privileged members of society have to realise that power is unequally distributed. It suggests that the followers approve of inequality in the community, almost like the leaders (Hofstede, 2010; Hofstede, 2021).

Hungary scores 46, which is quite low on this dimension, meaning that the Hungarian cultural society is more independent, power hierarchy is not entrenched in the organisational cultures and is only applied when it is convenient, the supervisors are easily accessible. Also, managers encourage teamwork and consultation of employees on various cadres in the organisation. It is important to note that the Hungarian labour force hates control and prefers direct and participative communication from the management. The power is decentralised, and bosses rely on the experience of their group associates. Hungarian culture is mainly informal as they prefer using their first name to address their seniors. This business culture makes the employment and labour market less intimidating (Hofstede, 2021).

b) Individualism

Hofstede stated that Individualism refers to the emphasis on interpersonal relationships and achievements, with a high score on Individualism, indicating that a particular economy's business culture is mainly concerned with individual achievement. Individuals in societies that maintain an individualistic business culture tend to have poor interpersonal skills, and thus it becomes difficult to relate with colleagues and business clients. However, low scores in individualism indicate that the population is more open to teamwork and collective responsibility, a culture that extends beyond business to the family level (Hofstede, 2021).

Hungary scores 80, indicating that the business culture is highly individualistic. The social structure in Hungary is low as individuals only think of themselves and their close family members. In the workplace, this may be detrimental as employees face low

self-esteem, and the relationship between the employers and the employees is built on a common gain, while hiring and promotion of staff are founded on excellence and performance (Hofstede, 2021).

c) Masculinity

Masculinity refers to how society views or supports men's traditional roles in an organisation in terms of leadership, control, and achievements. An economy that ranks high on this parameter indicates that there is a high gap in gender responsibilities. Whereby the male gender dominates a substantial part of the economy. A country with low masculinity shows no discrimination in terms of gender, and all genders are treated equally. An equal distribution of duties and responsibilities in any economy is not only beneficial to the organisation but also to the economy at large. A feminine business culture focuses on the quality of employees' lives (Hofstede, 2021).

Hungary scores 88 on this parameter and thus can be termed a Masculine society. This means that in Hungary, the population views work as their mode of survival, meaning that they live to work. In a company setting, proper management is critical as employees are aggressive to remain competitive and improve performance (Hofstede, 2021).

d) Uncertainty Avoidance

Uncertainty Avoidance focuses on the business culture's perception of risks. A country that rates high uncertainty avoidance shows that the population is risk-averse, hence adhering to strict rules and regulations and laws. However, a country with high scores in uncertainty avoidance implies that society is willing to take risks and readily accept change, especially technological innovation (Hofstede, 2021).

Hungary scores 82 in this parameter, meaning that it is intolerant towards taking risks. Hungarians are punctual, hard-working, precise, and believe in following the rule of law. However, since Hungary is considered risk intolerant, they hardly accept innovation, especially in the ever-changing and dynamic business environment.

e) Long Term Orientation

Long-term orientation emphasizes the goals of businesses in any society. High scores in long-term orientation indicate that the business culture is oriented towards long-term goals, hence implementing strong business ethics. A country that scores low on the long-term orientation indicates the business culture is geared toward short-term goals and commitments. The goals associated with short-term orientation include respecting society's traditions and fulfilling social responsibilities (Hofstede, 2021). Hungary receives a score of 58 in this parameter, indicating that the country is more hands-on or real, with the population relying on situation and timing. Hungary's population is very flexible and readily accepts changes in the business environment attributed to technological advancement. Additionally, the score indicates that the saving culture is deeply entrenched in the Hungarian population (Hofstede, 2021).

f) Indulgence

Hofstede used the indulgence parameter to measure the socialisation culture of a country. The indulgence culture is entrenched in the early stages of a child's growth and development. A country whose population cannot control its desires can be termed as indulgent, while a country can control its desires termed as a restraint. In this parameter,

Hungary scores 31, indicating that Hungarian culture is restrained. Hence, the population is more work-oriented and does not focus on leisure activities (Hofstede, 2021).

4. FOREIGN DIRECT INVESTMENTS IN THE CEE REGION

The CEE region witnessed an increase in FDI inflows until the global financial crisis, which led to a sharp decline. According to Popescu (2014), low labour costs motivate FDIs by foreign or multinational companies. Due to low production costs, cheap resources, and skilled workers, CEE countries experienced similar FDI movements after the transition period and for the better part of the early 2000s (Lrincz, 2018). Additionally, Radulescu et al. (2019) observed that, except for Hungary and the Czech Republic, low wages in other CEE countries were an added advantage in attracting FDIs.

However, FDI values in the CEE countries vary depending on how the author groups the countries (Engle et al., 2020). We compare the FDI inflows and outflows between Hungary and a few selected CEE countries (Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovak Republic, and Slovenia) using the OECD Foreign Direct Statistics 2021. Poland and Hungary had experienced a gradual but not consistent increase in FDI inflows of approximately USD 13.7 million and USD 6.7 million, respectively, by the end of 2020. However, the Slovak Republic and Slovenia recorded low FDI inflows in 2020, with the Slovak Republic recording the lowest value of approximately USD 1.9 million, as shown in the table below.

Table 1. FDI inflows of selected CEE Countries

	2016	2017	2018	2019	2020
Czech Republic	9,814	9,518	11,010	10,109	6,292
Estonia	1,058	1,947	1,516	3,184	3,388
Hungary	-5,439	3,514	6,460	4,105	6,722
Latvia	253	708	963	902	1,011
Lithuania	302	1,019	976	3,022	3,484
Poland	16,596	9,537	16,376	13,326	13,650
Slovak Republic	805	4,008	1,643	2,511	-1,926
Slovenia	1,245	896	1,383	1,463	205

Source: (OECD-Foreign Direct Investment Statistics, 2021).

Table 2. FDI Outflows of selected CEE Countries

	2016	2017	2018	2019	2020
Czech Republic	2,182	7,557	8,663	4,128	3,142
Estonia	486	888	45	1,966	219
Hungary	-8,272	1,220	3,363	3,238	4,286
Latvia	160	138	203	-104	269
Lithuania	43	80	704	1,746	2,868
Poland	12,389	1,908	1,239	1,674	1,104
Slovak Republic	95	1,323	291	43	235
Slovenia	290	338	281	610	508

Source: (OECD-Foreign Direct Investment Statistics, 2021).

Hungary, Czech Republic, and Lithuania recorded the highest FDI outflows in 2020 of approximately USD 4.3 million, 3.1 million, and 2.9 million, respectively. However, Estonia recorded the lowest FDI outflows of USD 219 in 2020, an 88.9% decline from 2019.

4.1. Foreign Direct Investment and GDP in the CEE Region

After agreeing to join the European Union, the CEE region attracted high volumes of FDI inflows, hence achieving high economic growth (Radulescu et al., 2019). According to Hlavacek and Domanska (2016), higher FDIs impacted economic growth in Hungary, the Czech Republic, and the Slovak Republic in 2016, while Slovenia and Poland experienced a lower FDI impact on economic growth. However, the CEE region has noted a gradual increase in FDI stocks as a share of GDP (OECD, 2021). Estonia, the Czech Republic, and Hungary had the highest FDI stocks as a share of GDP in 2020. Since 2016, Estonia has seen high growth. Nevertheless, Slovenia recorded a slight increase, but the lowest FDI stock share of GDP from 2016 to 2020.

Table 3. FDI and GDP of selected CEE Countries

As a share of GDP (%)	2016	2017	2018	2019	2020p
Czech Republic	62	71	66	68	77
Estonia	79	87	80	88	110
Hungary	64	65	57	57	65
Latvia	51	58	51	53	61
Lithuania	38	41	36	43	53
Poland	40	45	39	40	42
Slovak Republic	53	62	57	58	61
Slovenia	31	34	32	34	38

Source: (OECD-Foreign Direct Investment Statistics, 2021).

In a nutshell, according Berber et al. (2017) and Karoliny et al. (2009), the primary areas of similarities and differences in terms of the *importance of the human resource function* and *the role of the human resource department* across the CEE countries, defining them as a distinct HR cluster, are that the labour cost ratio is relatively low and that the influence of local offices and establishment policies is perceived to be strong in large companies. Also, the use of external human resource service providers in the areas of pay and benefits, workforce reduction, and one noteworthy distinction between Hungary and the remaining CEE countries on this topic is that line managers were stated to have a much greater role in and main responsibility for all HR functions assessed than any other decision-makers who have influence over HR strategies.

4.2. Foreign Direct Investments and Employment

The intrinsic nature of Foreign Direct Investment (FDIs) is to get control of a company's assets and operations in other countries (Poór et al., 2017). The Central and Eastern European countries were ranked as the third most attractive foreign investment location after Western Europe and China (Lőrincz, 2018).

According to Poór et al. (2017) and Lőrincz (2018), FDI is essential for economic growth, development, and employment, particularly in the CEE countries. Previous studies

have shown that FDI inflows positively influence employment and wages (Golejewska, 2002; Jenkins, 2006). The United Nations' UNCTAD (2021) reports that employment by foreign affiliates was at approximately 86 million people in 2018. However, according to Poór et al. (2017), the employment of workers by MNCs in their subsidiaries varies across countries.

Foreign Direct Investments (FDIs) have played a dynamic role in the successful reformation of the Hungarian economy after collapsing the previous system in 1990. As a result, Hungary has one of the best open economies in the area. It has enabled yield growth, technological innovation, and export capability. Hence, it is crucial for solid growth potential and new opportunities (Hungarian Central Statistical Office, 2021). As a result, Hungary has sustained its position as an eye-catching investment target. Besides, it is broadly considered the gateway to Central and Southeast Europe, making it an attractive foreign investment market.

Furthermore, FDIs play a very crucial role in economic growth and employment, especially in EU countries. For example, in Hungary, international companies' subsidiaries began penetrating in 1988 due to foreign investors eyeing partnership opportunities with the local companies. This move led to the gradual growth of foreign direct investment and employment (Poór et al., 2014).

Hungary has one of the highest rates of FDI stock per capita in Central and Eastern Europe. Moreover, the Hungarian FDI stock represents the highest percentage of GDP (82.2%) in the Central European region. At the end of 2018, Hungary's FDI stock stood at EUR 88.7 billion (Santander, 2019; Hungarian Central Statistical Office, 2021).

Table 4. Foreign Direct Investments (2017–2019)

Foreign Direct Investment	2017	2018	2019
FDI Inward Flow (million USD)	3,502	8,365	5,205
FDI Stock (million USD)	93,619	95,787	97,841
Number of Greenfield Investments*	83	114	102
Value of Greenfield Investments (million USD)	3,055	4,894	7,515

Note: Greenfield Investments is an investment type in which a parent firm starts a new business in a foreign country by constructing new operating facilities from scratch*

Source: (UNCTAD, 2020).

Hungary retains a high per capita foreign direct investment (FDI) stock for Central and Eastern Europe. Nevertheless, the crisis in 2009 has profoundly impacted FDI flows to Hungary, and since that time, the size of inward FDI flows has been smaller. Nevertheless, FDI backed up in 2018 to reach USD 6.3 billion, nearly doubled. In addition, Hungary approved a new law, presenting a foreign investment screening mechanism related to national security in some sectors such as defence, products, utilities, the financial industry, electronic communication, and public communication systems.

Most FDI inflows were capitalised in manufacturing (“equipment, electronic, automotive, chemistry”). Based on the “World Investment Report 2019”, stock was reduced by 2%, reaching \$88 billion in 2018 (57% of GDP). Table 1 below shows the vital investing

countries: Germany, the Netherlands, Luxembourg, Ireland, the US, France, and South Korea. FDI mainly focuses on manufacturing, trade, personal, scientific, and technical activities, and financial support.

In recent years, Hungary has encouraged FDI to shift away from low-value textile and food-processing sectors and toward wholesale, retail trade, and vehicle repair. Nevertheless, the country's demographic decline and the education system's slow progress hamper vital structural transformation. Furthermore, the Hungarian government approved an investment screening law, which came into force at the beginning of 2019 on the back of security concerns.

Table 5. Flows of foreign direct investments by country and industries.

Main Investing Countries	2020, in %
Germany	13.0
Netherlands	10.3
Luxembourg	10.1
Ireland	9.4
United States	9.1
France	7.5
South Korea	6.7

Source: (Central bank of Hungary, 2020).

Figure 5 below shows the main sectors of investment among foreign-owned companies in Hungary. It displays that the manufacturing sector occupies the largest quota of the foreign market share, at 38%, followed by wholesale trade and the vehicle sector at 13.7%. On the other hand, 6.1% for professional and technical services and the lowest share goes to monetary intermediation (Central bank of Hungary, 2020).

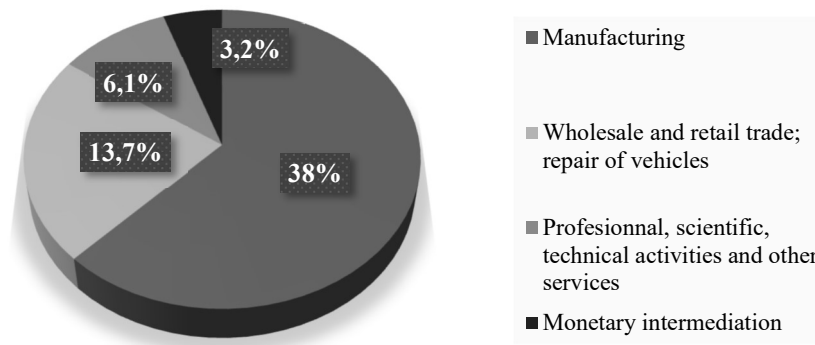


Figure 5. Main Invested Sectors in Hungary 2020

Source: (Central Bank of Hungary, 2020).

4.3. Strong Aspects for FDI in Hungary

Hungary is widely considered the gateway to Central and Southeast Europe, making it an attractive foreign investment market. The workforce in Hungary is highly educated and competent, with a particular emphasis on engineering, medicine, and the economy. There has been a literacy rate of 99.1% since 2015. Despite a temporary slowdown in 2015, Hungary's economy remains one of the fastest growing in the EU. Its banking system is one of the region's most advanced. Its infrastructure, workforce, and regulatory framework are of excellent quality and offer significant supply chains in the automotive and electronics industries. Moreover, the EU funds have continued to expand since 2004.

With the assistance of major international organizations, EU integration improved political and economic stability while mitigating the effects of the crisis. The National Development Plan 2014-2020 allocates EUR 6 billion to additional tourism, health, infrastructure, and environmental protection programs. Multinational and foreign-owned companies gain entrance to other countries for traditional reasons but seek to balance the apportionment of resources and improve economies of scale by moving their activities to countries considered to be low-cost (Dowling et al., 2013). The entry of foreign-owned firms into any economy is considered the motivation towards globalisation which significantly impacts corporate human resource activities (Venegas et al., 2016). Therefore, it can be argued that the substantial effect of IHRM today is attributed to the changes in foreign direct investment globally.

After World War II, the international business environment changed drastically, especially with American companies entering practically all countries globally. This saw an expansion of cross-border business and economic activities, leading to developed and developing countries' economic growth. According to Hill (2019), there is a strong and positive correlation between FDI and various economies' economic development. Economies witnessed a gradual increase in FDIs until the 2008 financial crisis, which resulted in a drop in reserve trends and other indicators such as foreign trade and employment (Poór et al., 2014; UNCTAD, 2020). Currently, FDI flows are more inclined towards the developed economies, unlike previously, where the flows were mainly intense in the developing economies (Collings et al., 2007).

Ultimately, according to the OECD (2020) report, FDI in Hungary has continued to increase, thus positively impacting the production capacity, especially in the country's central and western parts. Hungary's FDIs are mainly from multinational companies that move their production activities intended for Hungary's global markets. That has been encouraged by reducing the Hungarian government's corporate tax to boost business investments, especially from multinational companies. Moreover, in the fourth quarter of 2020, Hungarian foreign direct investment grew by EUR 1606.50 million (National Bank of Hungary, 2021).

5. CONCLUSION

International HRM has grown significantly with the entry of multinational companies. Recently, the Hungarian population and business community have become cognizant that human resource management is crucial in the running and success of any organisational performance. This has compelled organizations to create and adopt more systematic and strategic human resource management and practice approaches, putting Hungary's HRM

practices above those of other countries in the Central and Eastern European countries (Németh and Vékás, 2019).

The presence of multinational companies has a significant impact on the economic growth and development, employment, and human resource practices of host countries. The Central and Eastern European regions were the hub for attracting foreign investors. This was attributed to low labour costs, low production costs, and growth opportunities compared to Western European countries. However, this changed after the global financial crisis. Its impact was closely felt in Hungary as the Hungarian population, which possessed the ability to speak different languages, migrated to neighbouring countries since it was easier for multinational companies to substitute between the factor inputs. As a result, the CEE region, particularly Hungary, has been gradually recovering from the global financial crisis to try and restore its former glory and position itself as the most attractive country for foreign companies to invest in.

The study, therefore, sought to examine the HRM practices of foreign-owned companies and Hungary's socioeconomic environment. The study found Hungary to be an attractive foreign investment market because, *first*, Hungary is not only broadly considered the gateway to Central and Southeast Europe but also because the Hungarian workforce is composed of highly skilled workers. *Second*, the social-cultural aspect, where the Hungarian cultural society is more independent, power hierarchy is not entrenched in the organisational culture, highly individualistic, masculine, intolerant towards taking risks, realistic, and culturally restrained. And *lastly*, the FDI's. The study analysed Foreign Direct Investments in Hungary in comparison to selected countries in the CEE region. The study found that Hungary had high FDI stocks in GDP and high FDI inflows during 2020. However, the FDI's in Hungary is mainly from multinational companies that move their production activities intended for Hungary's global markets.

For companies to remain in the global market, developing innovative ideas that are distinct from rivals is essential. In addition, changes in economic, cultural, and technological shifts are causing new organisational demands that push human resources in new ways. HR experts believe that globalisation, increasing generational differences, and an increased focus on innovation and sustainability are all causing major shifts in how organisations operate (Hitka et al., 2017). Eventually, this study recommends further research on how the COVID 19 pandemic has affected multinational companies, particularly with the introduction of work-from-home policies.

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PRICE DISCRIMINATION IN A FORM OF DISCOUNTS: CATEGORIZATION AND IMPACT ON COMPETITION

This paper is aimed to clarify the definition and categorization of discounts as well as pro- and anticompetitive effects of discounts. The author applied qualitative methods to the research. The modern literature review unfolds the gap of proper discounts definition, which is proposed to be covered by five-dimensions approach to discounts categorization. Based on such aspects of discount scheme as time, product, threshold, distribution level and customer, the approach provides comprehensive and uniform characteristics of discount. It allows assessing effects of competition, which are classified in two groups. Pro-competitive effects include stimulation of demand, decreasing cost due to economy of scale, solving coordination problems within a supply chain. Anti-competitive effects encompass predation scheme, raising rival's cost, exclusive dealing, leverage and exclusionary bundling. The importance of correct assessment of the discounts by antitrust authorities is high as an overenforcement in this sphere may lead to adverse effect on total welfare.

Keywords: competition, price discrimination, discounts, antitrust.

1. INTRODUCTION

Most probably discounts as trade practices were widely used long before the competition law and economics began to be studied at universities. As a form of a price cut, a discount is intuitively welcomed by every customer. Being consumers, we see discounts everywhere: from buying a last-minute travel offer for a sea-side tour, then using an airline loyalty card in hopes to save some money or get benefits in duty-free on board, to haggling over a price of souvenirs on a local market. Shopaholics know that discounts usually lead rather to higher spending than to saving, so there should be profits for sellers. Distributors and retailers teach their staff the art of negotiation to get better price conditions. It is remarkable that in fact each non-linear pricing scheme seems like a discount to one group/concrete customer, and like an additional surcharge to another group of customers (Financial Conduct Authority, 2016). Customers perceive discounts as fair and premium as unfair. Therefore, on consumer's level companies underline discounts rather than a surcharge in communication. On upper level "unfairness" leads to claims to competition authorities which consequently have to distinguish between protecting competitors and protecting competition.

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Indeed, the conditional pricing is common for many companies regardless the degree of market dominance across various markets and is usually is a sign of a competitive behavior.

2. LITERATURE REVIEW

In various sources discounts are defined differently. According to the European Commission, “discounts are generally offered on individual transactions, whereas rebates are normally deductions or cash payments made to a customer in accordance with the latter’s purchases over a period of time” (European Commission, 2008) and “Conditional rebates are rebates granted to customers to reward them for a particular form of purchasing behavior” (European Commission, 2009). In 2005 OFT defined a fidelity rebate as “one that either explicitly or implicitly makes discounts conditional on the share of a buyer's needs taken from a supplier.” (Office of Fair Trade, 2005). The later definition by OECD combines discounts and rebates: “Fidelity rebates or loyalty discount schemes (sometimes referred to as exclusivity rebate schemes) allow sellers to price discriminate and offer buyers a better price that is conditional on the buyer demonstrating loyalty in the purchases they make. They therefore involve a discriminatory price reduction for loyal customers or reflect the introduction of a price penalty for disloyal customers.” (OECD, 2016).

Despite a number of related economic papers, “The terminology for different types of conditional pricing practices remains unsettled and different terms are often used to describe schemes that reward some definition of loyalty” (OECD, 2016).

In fact, various definitions and classifications of discounts describe different dimensions of the same pricing scheme. Thus, multi-product discount with quantity threshold and retroactive effect, offered to one specific customer, may be called a retroactive rebate, bundling discount, loyalty rebate and targeted discount. Therefore, the article proposes to classify discounts from the viewpoint of five different dimensions (time, product, threshold, distribution level and customer) and further analyze possible effects on competition based on this classification (Ahlborn, Bailey, 2006; Wright, 2013)². Terms “discounts” and “rebates” are used interchangeably in the article in a meaning of various forms of non-linear pricing.

3. METHODOLOGY

This study used a qualitative research paradigm. The method used is a descriptive-qualitative analysis technique, aimed to illustrate the lack of proper definition and categorization of discounts in modern economic literature. The content analysis of literature, competition authorities’ decisions and respective court judgments was used to find similarities and propose the discounts categorization approach, as well as to systemize the pro- and anticompetitive effects of discounts on competition.

² Classification of discounts by three dimensions are used in J.D. Wright “Simple but Wrong or Complex but More Accurate? The Case for an Exclusive Dealing-Based Approach to Evaluating Loyalty Discounts.” Speech delivered at the Bates White 10th Annual Antitrust Conference, Washington, DC, on 3 June 2013 as well as by C. Ahlborn and D. Bailey, ‘Discounts and Selective Pricing by Dominant Firms: A Trans-Atlantic Comparison’, 2 *European Competition Journal* (2006) 101, 1004.

4. RESULTS AND DISCUSSION

4.1. Discounts categorization

The article proposes a 5-dimension approach to the discount categorization. An application of this approach provides a possibility to analyze and classify discounts in aspects of time, product, threshold, distribution level and customer.

4.2. Time dimension: incremental and retroactive rebates

From time perspective there are two types of discounts. Incremental one provides the lower price on each unit above the certain threshold without affecting prices below the threshold. The retroactive rebate (also called as all-unit or roll-back discount), is calculated on total quantity or volume of trade when the threshold is reached. While the latter is an attractive instrument for sales boosting, it may lead to very low or even negative prices for units over the certain level of sales. In case of application by dominant company it may result in excluding even as efficient competitor from competition for the buyer, especially when the threshold covers substantial part of the market. That's why competition agencies are usually concerned about roll-back rebates rather than about incremental.

Furthermore, some sources define the duration rebate as a specific type of discounts where the threshold is not the quantity or market share, but a certain period of purchases made from the discount granter. Such period often exceeds normal contractual term for the industry. Also, the pricing scheme may include tacit prolongation clause and provide for a penalty in case the threshold period is not reached (Autorité de la concurrence, 2018). Such practice is relevant rather for distributors than end consumers as customers and in certain extend has effect of "tying" to a specific supplier. However, we would consider the duration of a rebate and termination fee as an important factor to look at under discounts assessment, rather than as a separate discount type, because duration rebate can also be a single- or multiproduct, given exclusively to one or to all customers.

4.3. Product dimension: single- and multi-product discounts

At first glance this classification looks simply: it distinguishes between a rebate given on one product or a list of products, and both variants are common practice. As a rule, a bundled discount stands for a bundle of products which may not be sold as separate units. Yet, this dimension is important due to different possible effects on competition. The mix of unique and non-unique products within one bundle or a list of products may leverage supplier's market power in a competitive market. A bundled discount provides a buyer with lower prices for one or several products, in this way shifting a part of purchases from a competing supplier and gaining customer loyalty. As a result, the entry of a new supplier to the market can be constrained as well as existing rivals may be forced to exit (Greenlee, Reitman, Sibley, 2006). Nevertheless, multiproduct discounts are generally beneficial for customers as they may capture customer groups with different demand elasticity for concrete products in a bundle, hence output is increased and cost per unit respectively declines. Another positive effect is competition by bundles which fierce the race between suppliers.

There is a wide variety of discount scheme designs based on a product mix. For instance, in one of the Antimonopoly Committee of Ukraine cases (AMCU, 2017) sophisticated multiproduct rebates were considered anticompetitive, when discount amount was calculated as a percentage of sales of a variety of products with no or limited number of

substitutes but allocated to sales of a short list of products which have a lot of competitive products from rival suppliers. Subsequently, the margin for this short list of products became quite high, and distributors were interested to sell these products instead of rivals' products due to substantially higher profitability. If the access to distribution chain is important due to the market structure, such multiproduct discount may have potentially exclusion effect.

4.4. Threshold dimension: quantity, market-share and slot-share rebates

Commonly, the rebate percentage or absolute amount is set under a condition of reaching a certain threshold (mainly as discrete steps) – in quantity of products, volume of sales, market shares or share in total customer purchases or other KPIs like shelf space. This dimension collects such discount type “tags” as conditional rebates, conditional pricing practices etc.

Discounts with quantity threshold, named as a “quantity discount” offered to all customers as a set of prices depending on purchased quantity and given incrementally, do not usually rise competition concerns even if a supplier is dominant as they are grounded on the efficiency reached by higher sales volume. However, the same “quantity discount”, given retroactively with customer-specific steps would be defined as a “loyalty rebate” or “retroactive rebate” (Niels, Jenkins, Kavanagh, 2016) with high probability of anticompetitive effect. This example confirms that intersection of proposed dimensions provides more accurate characteristic of a discount than any other definition.

Rebates with market-share threshold (also called as “exclusivity”, or “fidelity” rebates) are focused not solely on sales volume, but a concrete share of sales of the customer from dominant supplier which are necessary to keep in order to get a rebate as a reward for the loyalty. Discounts with market-share threshold are treated suspicious by antitrust authorities due to the potential to foreclose smaller rivals or even withhold the economy of scale, with further harm for consumers' welfare (Majumdar, Shaffer, 2007). At the same time, the non-exclusionary rationale for market share thresholds as an increase of distribution channel efficiency (Mills, 2009) and rent extraction independent on effect on rivals are not considered anticompetitive by some sources.

4.5. Distribution level dimension: discounts offered to distributors, retailers and consumers

On a retail level discounts are given to end consumers for various reasons: to build loyalty, to attract new customers, to increase sales and even to get rid of old stock. There are various ways to offer discounts to end consumers – from loyalty cards to collection of stamps. Normally, rebates on a retail level do not concern competition authorities as they are aimed to fierce price and intra-brand competition and increase output. However, certain retail practices may have anticompetitive impact. For example, loyalty programs may increase switching costs and make a “but for” indifferent customer a brand-loyal, decreasing elasticity of demand and possibly leading to higher prices and lower consumer's welfare (Kobayashi, 2005). Another example is so-called EDLP pricing (Every Day Low Price), a discount given to customer who confirms lower rival price to certain list of products. In certain cases, such practice may lead to coordination between retailers and finally higher prices for pretended to be low prices product list (Corstjens, Corstjens, 2005). Co-brand loyalty programs between a retailer and gasoline station (discounts for products on adjacent

markets) or a bank (special offers for an interchange fee or customer credit options) may maintain market power. But as functional loyalty instruments may be replicated by rivals, such actions usually increase competition and lead to consumer benefits.

Discounts offered to wholesalers and retailers are aimed to increase sales volume, to prevent switching to another supplier and could make coordination between rivals more difficult. At the same time rebates on this level may have exclusionary character, prevent access to distribution chain and customers and passing the discount to consumers, soften competition. Due to the above-mentioned effects and usually substantial volume of sales, rebates offered to distributors and retailers are in focus of antitrust agencies.

4.6. Customer dimension: uniformed and individualized rebates

All the above-mentioned rebates may be granted to a specific customer with special conditions. Such discounts offered by a dominant firm may have an exclusivity rationale and possible foreclosing effect on rivals. Contrary to exclusivity rebates, the transparent discount policy or loyalty program, developed by supplier and available equally to all buyers, is generally treated as less risky from antitrust perspective.

It is worth mentioning that accumulation of various types of discounts within one agreement in a complex or non-transparent way may increase the probability of anticompetitive effects.

Taking into account the above-mentioned information about various dimensions and other factors to be considered in definition and analysis of the discount scheme in terms of competition, we see that such analysis cannot be carried out from legal perspective only and requires the economic expertise.

4.7. Five dimensions approach to discounts categorization

The abovementioned aspects of discount categorization are shown on the Fig. 1.

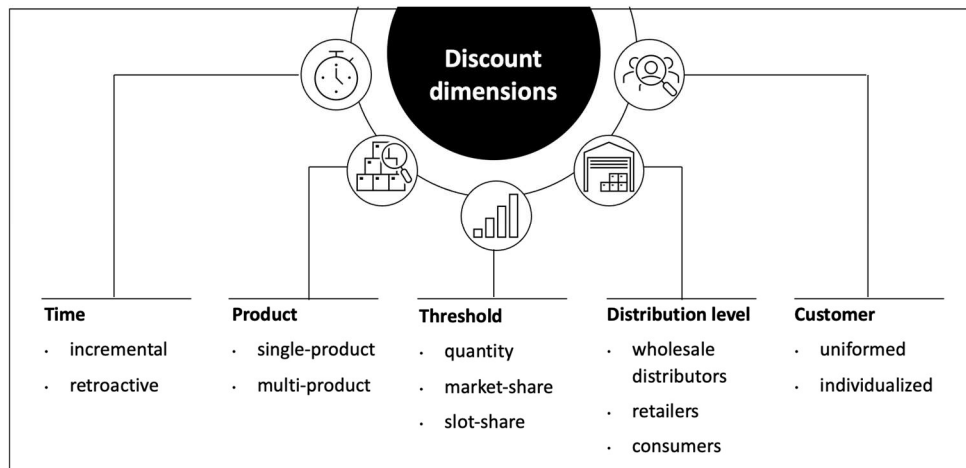


Figure 1. Five-dimensions approach to discounts categorization

Source: Author's work.

5. POSITIVE IMPACT OF DISCOUNTS ON COMPETITION

5.1. Discounts as a kind of price discrimination

Rebates as a price reduction instrument are generally beneficial to consumers. As a way of price discrimination, discounts may increase the output and therefore reduce unit cost and pass on economies of scale gains to customers. Discounts with volume thresholds are a common instrument of second degree price discrimination, providing self-selection options for customers (Ignatyuk, 2015). Rebates with individualized customer dimension may constitute a third degree price discrimination tool (Bishop, Walker, 2002). Rebates may optimize product pricing, enabling better price differentiation between customers and minimize double marginalization effect.

Discounts play an important role of price competition instrument and make collusion more difficult, notably when the total list price reduction is not profitable for a supplier.

In particular, bundled discounts are used as a price discrimination, however, the welfare effect of such practice is ambiguous (Motta, 2004) and depends on correlation with customer's preferences. In case of digital goods bundling may achieve an efficient allocation of products and benefit consumers (Jeon, Menicucci, 2009).

5.2. Stimulating demand discounts

Discounts may provide lower prices to customers with no experience of specific product consumption, thus stimulate demand, while allowing a seller to be profitable via discrimination of customers already familiar with a product. As a result, an output grows. Also, the value of some goods increases with more customers (network externalities) (Fletcher, Williams, Walker, 2016).

In addition, maximization of customer bargaining power due to discounts stimulates competition, too (Marvel, Yang, 2007).

Retro-active rebates with quantity threshold, fixed in contracts with big distributors, support the better production planning for supplier, thus contributing to better resources allocation.

5.3. Discounts as a way to solve coordination problems in the supply chain

Rebates may be used to align incentives between a buyer and supplier in order to solve a problem of moral hazard between producer, who is not able to track the distributor's actions, and the distributor (OECD, 2016).

Discounts are a convenient tool to prevent free-riding and hold-up problems, assuring the relationship-specific investments as well as top supply complementary services to consumers (Geradin, 2008).

5.4. Efficiency justifications

The abovementioned procompetitive effects of discount may be used as efficiency arguments by defendant. It should be noted that the main points of efficiency justification are the following:

- The case-specific and convincing evidence has to be provided by defendant to enable the evaluation of their actual extent;
- The efficiency gains can be achieved by application of discount scheme with the absence of less distortive alternative practice;

- The mere fact that a rebate is a common practice used by rivals is not sufficient justification associated with a competitive behavior, because the effect may vary upon market power degree (Autorité de la concurrence, 2018).

6. POSSIBLE NEGATIVE EFFECTS ON COMPETITION

Despite various positive effects which discounts as a form of price discrimination may cause on competition, under certain circumstances they may be used as an exclusionary power tool against competitors.

6.1. Loyalty discounts as predation

The predatory pricing is a costly and risky instrument to exclude rivals. First, it requires low pricing (usually below the cost) period in order to deter entry or force existing rivals to exit the market. On the second stage, when competitor is eliminated, the company recoups losses and enjoys additional profit increasing prices above the competitive level. The first period is beneficial for customers, the elimination of rival is not certain, the possibility that high prices on the second stage would attract new entries to the market is likely. This all makes an intervention of competition authorities difficult.

Discounts may also have a predatory pricing effect, but their application to selective customers or products may not require an overall profit sacrifice, thus, limiting the application of price-cost tests usually used to identify a predation behavior. When rebates are applied with a predatory intent, the profit sacrifice and recoupment may be done simultaneously across different customers and products range. Therefore, a price-cost test may be applied on a customer-by customer basis, or even to contestable units (Fumagalli, Motta, 2016). In practice such selective application is challenging due to assumptions of a contestable share and possible variation of a cost benchmark due to special conditions (e.g. logistics, packing etc.) between customers.

6.2. Analogy to exclusive dealing and raising rivals' cost

Rebates granted by a dominant firm may be aimed to induce a buyer not to buy from a rival supplier, as a result, having an exclusive dealing effect. Discounts with a retroactive time dimension and volume or market share thresholds reduce prices not only for incremental units, but also for all units purchased before, resulting in a so-called suction effect (European Commission, 2005). This effect means that a customer is motivated to obtain more of its incremental purchases from a specific supplier. Thereby, a contestable share of customer's purchases is decreased and the rival's access to customer is limited.

The rising rivals' cost paradigm (further – RRC) illustrates

the exclusionary conduct that totally or partially “forecloses” competitors from access either to critical inputs or customers, with the effect of causing them to raise their prices or reduce their output, thereby allowing the excluding firm to profit by setting a supracompetitive output price, with the effect of harming consumers (Salop, 2017).

In case of economy of scale, if a part of customers' sales is captured by discounts with market share thresholds, then rivals have to compete on a smaller market within a contestable share. Thus, fixed costs are spread within smaller sales quantity and average

costs may increase. So even an as efficient on the same sales volume competitor becomes less efficient on a remaining contestable share.

Apart from limiting the access to customers using rebates, a dominant firm may limit the access to the key input including raw materials, effective distribution channels or intellectual property (OECD, 2016). For instance, a recent decision of the Antimonopoly Committee of Ukraine describes how a discount scheme may soften competition with generic products by affecting the key distribution channels and, correspondingly, the access to customers (AMCU, 2017). If recipients of discounts are intermediaries within the exclusive dealing paradigm, then such discounts may “bribe” distributors to accept the exclusive dealing agreements (Federico, 2011).

The RRC foreclosure paradigm is more likely to be applied and affect customers than predatory pricing as RRC does not require a risky profit sacrifice before the possible recoupment. Moreover, under RRC conduct the foreclosure of a rival is not needed, because its rising cost is sufficient to stimulate higher prices and/or lower output.

However, under assumption of symmetrical firms, de-facto exclusive contracts may shift competition to the utility-space dimension where the products are homogeneous irrespective of their actual product differentiation. As companies would have an incentive to compete with exclusive contracts, this would lead to stronger competition and welfare increase. Notwithstanding, using the discounts with market share threshold for exclusivity purposes may lead to higher prices as they “penalize” competitors (Calzolari, Denicolo, 2009).

Yet, if firms are not symmetrical, the same practices applied by a dominant firm would lead to competition concern. As long as in real life firms are rather asymmetrical, the exclusive dealing paradigm of discounts is worth attention of competition authorities.

6.3. Tying and exclusionary bundling³

The characterization of anticompetitive effects caused by a bundled discount such as tying or exclusive dealing indicates that these two types of distribution restraint are closely related from an economic perspective (Gavil, Kovacic, Baker, Wright, 2017). In a bundle the product over which the company enjoys a market power is called a “linking” product and the rest are “linked” products. Thus, a bundle allows a company to extend its market power to otherwise competitive market for a linked product. If the unbundled price of a linked product is higher than its but-for price, then discounts have a tying effect. Profit-maximizing bundles reduce consumer welfare when the linked product market is competitive (Greenlee, Reitman, Sibley, 2006). If a buyer has to reach certain threshold to get a bundled discount, then such a discount would have a loyalty enhancing and exclusionary effect. As a consequence, competitors may be foreclosed (Geradin, Elhauge, 2011).

Multi-product rebates may be designed in a way to push a customer to buy the whole range of products, thus, having a tying or full-line forcing effect (Motta, 2004). In addition, bundled discounts may restrict a customer’s choice between tied and separate prices.

Considering that most of the described negative effects have nothing to do with pricing below cost, the application of a standard price-cost test may fail to identify a potential harm to competition.

³ Bundling discounts under certain circumstances may cause an exclusionary effect in a competitor foreclosure.

6.4. Rebates as an anti-competitive leverage

Although it sounds counterintuitive, in some cases discounts can maintain high prices. For example, if a company would like to divide the market and charge higher prices for loyal customers and thus avoid price reduction to compete for all customers including disloyal ones, it may offer discounts for the first customers group. Respectively, the price cut necessary for competition for a disloyal customer would require also an additional price cut for a loyal customer, especially, if the rebate is calculated from the list price for all customers. Hence, an incentive to compete for a disloyal customer is reduced and the market split between sellers is appealing. Under this scenario, the discount scheme may have a most-favoured-nation element (OECD, 2016). In contrary to overall low pricing, in application of discount scheme an efficient rival may have low incentive to cut prices to compete for free buyers, even if prices are above costs (Geradin, Elhauge, 2011).

Discounts may soften the interbrand competition due to uncertainty of buyers regarding the level of the final prices in the end of a reference period. Switching costs increase and a «penalty» for a lost discount in case of selecting another supplier may lead to higher prices (Faella, 2008).

6.5. Variety of effects on competition caused by discounts

The abovementioned impact of discount schemes on competition is summarized on Fig. 2.

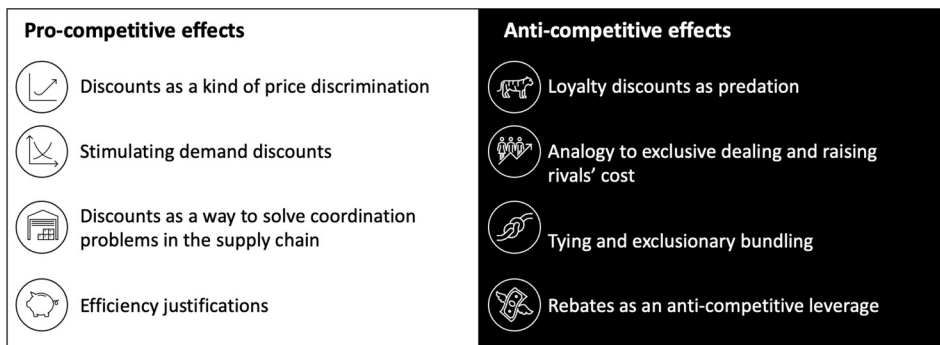


Figure 2. Effects of discounts on competition

Source: Author's work.

In practice the evaluation of pro- and anticompetitive effect on competition is not that black and white. Multiple effects of discounts require proper economic instruments to distinguish between negative and positive impact by competition practitioners.

7. CONCLUSION

In order to close the gap of clear definition of discount types in modern literature, the article proposes the holistic approach to the rebate scheme analysis based on five aspects such as time, product, threshold, distribution level and customer. The benefit of the proposed five-dimensions approach to the discount categorization is the uniform analysis of the discount design, applicable to various discount schemes, which provides clear criteria of discounts comparability and a basis for a competition effects evaluation. The limitation

lays in the necessity to have all information relevant to define 5 dimensions of the rebate scheme.

As a form of price discrimination, application of discounts may stimulate demand, decrease cost due to economy of scale, solve coordination problems within a supply chain. Still, under certain circumstances discounts may be used as a predation scheme, raised rival's costs, act as an exclusive dealing, leverage market power via exclusionary bundling.

Despite the possibility of using the rebates scheme as an exclusionary power tool against competitors, the over-enforcement of price discrimination in form of discounts by competition authorities may have even more harmful effect on total welfare. It may stimulate the non-dominant firms to avoid discounting practices and eliminate procompetitive effects of price discrimination. Therefore, respective economic instruments and transparent approach to price discrimination are required in modern competition authorities' toolkit.

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FINANCIAL LITERACY ON SMALL AND MICRO BUSINESS OF THE INDIGENOUS PEOPLE OF PAPUA IN JAYAPURA CITY

This study is a quantitative study that aimed to find the level of financial literacy of Papuan Micro, Small, and Medium Enterprises (MSME) and the factors that influence it. The sample consisted of 75 respondents of MSME actors in Jayapura city at *Pasar Mama-Mama Papua*. The data was analyzed using multiple linear regression method with SPSS version 22.0. The results showed that (1) the level of financial literacy in Jayapura city is low, (2) there is no influence of gender towards the level of financial literacy, (3) there is an influence of last educational level towards the level of financial literacy, (4) there is no influence of monthly profit towards the level of financial literacy, (5) there is an influence of investment towards the level of financial literacy, (6) there is an influence of borrowing and saving in bank towards the level of financial literacy, (7) there is an influence of insurance towards the level of financial literacy.

Keywords: financial literacy, gender, education, profit, investment, borrowing and saving, insurance.

1. INTRODUCTION

The world today is facing not only a global crisis, but also a financial crisis. A few years ago some countries had discussed about the financial literacy which cannot be separated by the increase of the population. Moreover, the lack of financial literacy is considered to be one of the factors that affect financial decision-making, and its less information may have a negative impact. According to the Indonesian Financial Services Authority (OJK) survey in 2013 and 2016, the level of financial literacy in Indonesia is improving, for instance, the ratio in 2013 was 21.8%, and in 2016 it increased by 29.7% (Otoritas Jasa Keuangan,

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2017). The citizen should be able to manage their finances and its practice wisely due to follow the financial market development. Hence, financial literacy is needed for the citizen since it is related to personal economic and has a purpose to manage the financial in a proper way, thus it can fulfill people's necessity and prosperity.

The law regulation on the Authority of financial service (No. 21/2011) has mandated OJK to manage and supervise the financial service industry. OJK is also mandate to protect the community interest while interacting with the financial service industry. The main purpose of the national financial literacy strategy is to create Indonesian citizenship with high financial literacy level (well literate). Thus, the community can choose and utilize a product and a financial service to increase the welfare (Welly et al., 2018). Moreover, by utilizing various financial sectors and managing finances properly according to the needs will help to reduce the lack of knowledge on low literacy.

There are some factors that influence financial literacy, those are; (a) age, (b) work experience, (c) mother's education, and (d) department (Ansong and Gyensare, 2012). While, Margaretha and Pambudhi (2015) found that gender, GPA, and parents' income on financial literacy level as the financial literacy factors also play an important role. Another study by Sucuahi (2013) stated that age, spending habit, gender, faculty, and college year entry affect the financial literacy. Meanwhile, according to OJK, the factors that influence financial literacy are: (1) gender, (2) education level, and (3) income level (Otoritas Jasa Keuangan, 2017). From some previous studies above, the dominant factor is gender. Gender really determines whether the person understands literacy or not.

According to Amaliyah and Witiastuti (2015) found that gender and education have significant influence on the literacy level of MSME owner compared to the income level. They found that the financial literacy of male MSME owners is higher than female MSME owners. Whereas, Aribawa(2016) in his research stated that there is the effect of financial literacy on the performance and the sustainability of MSME business. It shows that good financial literacy is expected to be able to make decision of correct management and financial to improves the performance and sustainable of business.

Desiyanti (2016) stated that the financial understanding and literacy are very needed in this business world. Moreover, she claimed that the understanding of financial products in implementing the business world is also needed. She found that the financial product with the highest utility index value is the financial bank product (savings dominated) and the lowest product is the product of capital market financial.

According to BPS data of 2020, the citizen of Jayapura city which understanding of financial literacy only 14.2% from the total of Jayapura city community which has utilizing the product and service of finance institutions. This research is aimed to determine the effect of the determinants of financial literacy on the level of financial literacy. The financial literacy is also announcing the product of financial service such as investment, saving and borrowing and insurance. The financial literacy can connect the citizen welfare, especially the actors in the MSME sector and avoid from the financial investment activity which not clear such as avoiding of various illegal financial service providers (which is not registered/not having an official license with OJK) in their operations.

In this research, besides seeing on what is the role of financial institution product against financial literacy of Papuan MSME actors in Jayapura city, especially the Mama-Mama Papua market traders, the researchers also look at the characteristics of Papuan MSME actors such as gender, education level, and income. The understanding on financial literacy is needed for the business actors, especially for the MSME owners. The MSME

business owner becomes the target of open access in financial institutions or can be referred to as financial inclusion because MSME is one of the supporting factors of economic country to open new jobs and reduce the number of unemployment and crime. Therefore, the objective of this study is to analyze the factors of financial literacy knowledge of Papuan MSME actors in Jayapura city in order to avoid financial risks and take advantage of the role of financial institutions.

2. RESEARCH HYPOTHESIS

H1: It is suspected that gender affects the level of financial literacy of MSME actors in Jayapura City (Mama-Mama Papua market traders).

H2: It is suspected that educational background affects the level of financial literacy among Papuan Indigenous Micro and Small Business actors in Jayapura City (Mama-Mama Papua market traders).

H3: It is suspected that the amount of income affects the level of financial literacy of Papuan Indigenous Micro and Small Business actors in Jayapura City (Mama-Mama Papua market traders).

H4: It is suspected that investment knowledge affects the level of financial literacy among Papuan Indigenous Micro and Small Business actors in Jayapura City (Mama-Mama Papua market traders).

H5: It is suspected that knowledge of saving and borrowing affects the level of financial literacy among Papuan Indigenous Micro and Small Business actors in Jayapura City (Mama-Mama Papua market traders).

H6: It is suspected that the use of insurance affects the level of financial literacy among Papuan Indigenous Micro and Small Business actors in Jayapura City (Mama-Mama Papua market traders).

3. METHODOLOGY

This study used a quantitative approach with survey research as the methodology. The survey research is a research which takes a sample from a population and uses a questionnaire as the research tools. The questionnaire is measured using the Likerts scale. The respondents are taken from traders who have a license to trade within the market. Random sampling techniques are used to draw samples from 180 Mama-Mama Papua market traders and obtained 75 Papuan MSMEs traders a sample study. The data are collected through questionnaires which were distributed in two ways: a). the questionnaires are distributed directly to the traders in Mama-Mama Papua market, and b) the questionnaires are distributed directly to shopkeepers who are believed as the wholesaler. The collected data are analyzed using descriptive analysis and Likert Scale to know the level of financial literacy of Papuan MSMEs actors in Mama – Mama Papua market in Jayapura city.

4. RESULT

The instrument test

The instrument test is implemented to know whether the research instrument has met the criteria of validity and reliability. The following is a test of reliability and validity.

a) Validity Test

Validity test is done to determine whether the questions are valid or not. The validation can be seen through person correlation which stated “valid” if the coefficient is greater or similar with 0.227. The result of validity test is seen in table 1 below:

Table 1. Recapitulation of questionnaire validity test

Variable	Item	Person Correlation	Information
Basic Knowledge of Finance (Y)	Q1	0.556	VALID
	Q2	0.527	VALID
	Q3	0.542	VALID
	Q4	0.654	VALID
	Q5	0.667	VALID
	Q6	0.568	VALID
	Q7	0.219	INVALID
	Q8	0.272	VALID
	Q9	0.390	VALID
	Q10	0.544	VALID
	Q11	0.452	VALID
Investment (X4)	Q12	0.318	VALID
	Q13	0.670	VALID
	Q14	0.658	VALID
	Q15	0.836	VALID
	Q16	0.692	VALID
Saving and borrowing (X5)	Q18	0.661	VALID
	Q19	0.518	VALID
	Q20	0.432	VALID
	Q21	0.540	VALID
	Q22	0.602	VALID
	Q23	0.682	VALID
	Q24	0.393	VALID
Insurance (X6)	Q25	0.279	VALID
	Q26	0.805	VALID
	Q27	0.479	VALID
	Q28	0.626	VALID
	Q29	0.501	VALID
	Q30	0.615	VALID

Source: Processed primary data, R table.

Based on the table 1 above, there is an invalid question within the basic knowledge of financial literacy (Y) variable. The question number 7 (Q7) is invalid since its correlation

is smaller than the R table, that is, $0.219 < 0.227$. While the other questions question within the Y variable are considered valid, because the person correlation is $> \alpha 0.227$. In investment variable (X4), all questions are considered valid with person correlation is greater than $0.227 (> 0.227)$. Similar to X4, saving and borrowing (X5) and insurance (X6) variables are also showed valid questions with person correlation > 0.227 . Based on the four variables above, it can be concluded that the questionnaire used in this study has total of 30 question with 29 valid questions and an invalid question.

b) Reliability Test

The reliability measurement within this study is done with cronbach's alpha score > 0.060 which included in sufficient reliability level. If the cronbach's alpha coefficient is less than 0.060 then the instrument is considered as not reliable and vice verse. The result is written in table 2 below:

Table 2. Recapitulation of reliability test result

Variable	Coefficient Cronbach's Alpha	Information
Basic Knowledge of Finance	0.670	RELIABLE
Investment	0.716	RELIABLE
Saving and borrowing	0.610	RELIABLE
Insurance	0.616	RELIABLE

Source: Processed Primary Data.

Based on the table 2 above, it is known that the entire variable is declared reliable because the cronbach's alpha coefficient is bigger than $0.060 (> 0.060)$. However, the question number 25 (Q25) within the X4 variable cannot be included in the reliability test because it can affect the reliability of the data. Thus, during the reliability test, Q25 is not included.

Classic assumption test

a) Normality Test

Normality test is implemented with the *Kolmogorov-Smirnov* test. The data can be declared as normally distributed if the sig. value is bigger than $0.05 (> 0.05)$. The normality test is analyzed using the SPSS statistical 22 application and obtained the result that all variables, variables X toward Y, are normally distributed with the significance level of 0.200 bigger than $0.05 (0.200 > 0.05)$.

b) Multicollinearity Test

Multicollinearity test is aimed to test whether the regression model has a correlation between the independent variables. The availability of multicollinearity can be seen from the tolerance value or the variance inflation factor (VIF) value. If the tolerance value is bigger than 10% and VIF value is smaller than 10 , it can be said that the regression model is free from multicollinearity problems. In this study, multicollinearity test is done using SPSS statistic 22 application and obtained that the tolerance value of four independent variables is above 0.10 and the VIF value is less than 10 . Thus, it can be concluded that all independent variables have no symptoms of multicollinearity.

c) Heteroscedasticity Test

Heteroscedasticity test is used to test whether in regression model has an imbalance variance from residual observation of one and another. If the sig. value of independent variable is bigger than 0.05 (> 0.05) then there is no heteroscedasticity. The result of heteroscedasticity test showed that the probability of all independent variables is more than 0.05 or 5%, thus the regression model of the heteroscedasticity is free.

d) Autocorrelation Test

In this research, the autocorrelation test is using Durbin-Watson test. It is said to pass the autocorrelation test if the DW is between the values of DU and 4-DU. Based on the test, it is known that the value of Durbin-Watson is 1.932 and the value of 4-DU (1.8013) is 2.1987, which means that it passes the autocorrelation test.

Hypothesis Test

a) Determination Coefficient (R^2)

Determination coefficient is used to know the relationship between the independent variable and the dependent variable. R^2 value is located between 0 to 1 ($0 \leq R^2 \leq 1$). The purpose is to determine the effect of independent variable on the dependent variable by using the application of SPSS statistics 22. The results showed that the R square value is 0.414, which means that independent variable can explain the dependent variable for 0.414 or 41.4% while the rest of 58.6% is influenced by other variable outside the model or cannot explained within this study.

b) Simultaneous Significant Test (F Test)

The F test in this study has purpose to determine the effect of gender, education, income, investment, saving and borrowing, and insurance together on the level of financial literacy. The way to test it, is by looking at the column F and the significance value contained in the ANOVA table. The result of F test can be seen in following table 3 below:

Table 3. Simultaneous significant test (F Test)

Model	Variable	F count	F table
X ₁ -Y	Gender Type	8.011	2.23521
X ₂ -Y	Latest Education	8.011	2.23521
X ₃ -Y	Monthly Income	8.011	2.23521
X ₄ -Y	Investment	8.011	2.23521
X ₅ -Y	Saving and Borrowing	8.011	2.23521
X ₆ -Y	Insurance	8.011	2.23521

Source: Processed primary data.

Based on the table 3 above, it can be concluded that F count is (7.662) $>$ F table (2.23521) which means the hypothesis is accepted.

Hypothesis test is done to know whether there is influence between independent and dependent variable. T test is used to test the hypotheses by comparing the significant level (Sig. t) of each independent variables with sig. value $\alpha = 0.05$. If the sig. t is smaller than $\alpha = 0.05$, then the hypothesis is accepted or there is significant influence between independent and dependent variable. Otherwise, if the sig t is bigger than $\alpha = 0.05$ then the

hypothesis is rejected or there is no significant influence between independent and dependent variable.

The financial literacy level of micro small business actors Papuans in Jayapura city

The descriptive analysis result for financial literacy of Papuan MSMEs actor in Jayapura city can be seen in statistic descriptive table below.

Table 4. Statistic Descriptions

No.	Variable	MIN	MAX	MEAN	Std. Deviation
1	Basic Knowledge of Finance	27.00	42.00	36.5467	3.42208
2	Investment	13.00	24.00	20.4133	2.27853
3	Saving and Borrowing	19.00	28.00	23.3467	2.22694
4	Insurance	10.00	21.00	15.1600	2.26632

Source: Processed primary data.

The frequency of financial literacy variable can be seen in the table 5 below that shows the percentage of financial literacy level for all variables.

Table 5. Frequency of financial literacy level

Category	Total Value X	Frequency (People)	Percentage (%)
Basic knowledge of finance			
High	$X > 37$	36	48%
Medium	$32 \leq X \leq 37$	33	44%
Low	$X < 32$	6	8%
Investment			
High	$X > 20,33$	40	53.33%
Medium	$16,67 \leq X \leq 20,33$	32	42.67%
Low	$X < 16,67$	3	4%
Saving and Borrowing			
High	$X > 25$	26	34.67%
Medium	$22 \leq X \leq 25$	27	36%
Low	$X < 22$	22	29.33%
Insurance			
High	$X > 17,67$	16	21.33%
Medium	$14,33 \leq X \leq 17,67$	29	38.67%
Low	$X < 14,33$	30	40%

Source: Processed primary data.

The table 5 above showed that there are 36 or 48% respondents included in high level of literacy, 33 or 44% in medium level of literacy, and 6 or 8% in low level of literacy. While in investment variable, 40 or 53.33% of respondents included in high category, 32 or

43.67% in medium category, and 3 or 4% in low category. In saving and borrowing variable, most of the respondent, for about 27 or 36%, is included in medium category. Whereas in insurance variable, there are 30 or 40% of the respondent included in low category of financial literacy. Thus it can be concluded that the respondents' financial literacy level in basic knowledge of financial and investment is included in high category. While the financial literacy level in saving and borrowing is included in medium category and insurance in low category.

5. DISCUSSION

The effect of gender on the financial literacy

The first hypothesis in this study is gender has influence on the financial literacy. The statistics test result on gender showed significance level for 0.061 or > 0.05 which means it has no significant influence on financial literacy of Papuan MSMEs actor or H1 is rejected. This is supported by Delafrooz and Paim, (2011) and Laily (2012) who found that gender variable has no direct influence on the students' financial literacy. Gender cannot be used to measure someone's ability in managing financial. Different with Ansong and Gyensare (2012) who found that men is better in managing their financial than women. However, gender is not supposed to affect someone's behavior in managing their financial, because money can be managed well based on its necessity.

The effect of latest education on the financial literacy

The second hypothesis stated that the last education has significant influence on financial literacy of Papuan MSMEs actor. The regression test result showed that the significance level is 0.036 which means smaller than $\alpha = 0.05$ or the hypothesis is accepted. This is supported by Amaliyah and Witiastuti, (2015) that stated people with higher education level must have higher literacy level. Most of the respondents, for about 45 people from total of 75 people, are having their last education background in high school. In this level, they are supposed to know about financial institution and know how to manage the financial in a good way.

The effect of monthly income on the financial literacy

The third hypothesis stated that the total of monthly income has no significant influence on the financial literacy of Papuan MSMEs actor. The regression test result showed that the significance level is bigger than 0.05 ($0.212 > 0.05$) which means H3 is rejected. In this study, the cross tab result between monthly income and age is not showing any significant relationship toward financial literacy level. It is similar to Amaliyah and Witiastuti (2015) research that said the income level is not significant or not influence the financial literacy level. Therefore it can be concluded that monthly income has no effect on the financial literacy level of Papuan MSMEs actor.

The effect of investment on the financial literacy

The fourth hypothesis in this study is investment for Papuan MSMEs actor has significant influence on financial literacy. The regression test result showed that the significant level is less than 0.05 ($0.04 < 0.05$) which means H4 is accepted. Papuan MSMEs actors tend to allocate their money to investment. Most of them are investing their money in jewelry or gold because they can sell it anytime they need money. This is supported by

Silvy and Yulianti (2013) that found out the financial knowledge and experience can influence the family behavior on the financial planning. Therefore, investment has positive influence on the financial literacy level.

The effect of saving and borrowing on the financial literacy

The fifth hypothesis stated that saving and borrowing has influence the financial literacy level of Papuan MSMEs actors. The regression test result showed that the significance level is smaller than 0.05 ($0.007 < 0.05$) which means H5 is accepted. Saving and borrowing are the main banking product known by Papuan MSMEs actors. Desiyanti (2016) stated that savings has the high of utility index value in MSME community. Moreover, the factor of bank interest also influence the saving and borrowing behavior of Papuan MSMEs actor. They will save their money when the interest level is high, and borrow some money when the interest is low.

The effect of insurance on the financial literacy

The sixth hypothesis stated that insurance has significant influence on the financial literacy. The regression test result showed the significance value is bigger from $\alpha = 0.05$ ($0.008 > \alpha = 0.05$) which means H6 is accepted. This result has significant influence because the majority of citizen, especially the Papuan MSMEs actor, understand about the insurance product. This research is in accordance with Wulandari and Narmaditya (2015) who stated that someone with high income has bigger potential in the insurance ownership rather than someone with low income. Insurance product is supposed to be needed by the Papuan MSMEs actors because it can protect the business if they had accident. Thus, Papuan MSMEs actors should be aware of the uncertain risks of their future business by using insurance products as the protection for their business.

6. CONCLUSION

Based on the result and discussion, it can be concluded that the financial literacy level of Papuan MSMEs actors in Jayapura city is included into the high category for the basic knowledge of finance and investment variables. While, for the variable of savings and borrowings it is included in medium category and the insurance variable in low category. Moreover, gender and monthly income have no significant influence on the financial literacy of Papuan MSME actors in Jayapura city. Meanwhile, the latest education, investment, saving and borrowing, and insurance have significant influence on the financial literacy of Papuan MSME actors in Jayapura City.

7. SUGGESTION

Due to the limitations of this study, the researchers suggest for futher research to add more independent variables, such as other banking products. The researchers also suggest to increase the sample, because insufficient samples may affect the validity and authenticity of the questionnaire. Also, it is also necessary to attention to the time of the questionnaire's spread in the market because it can interfere the transactions between buyers and sellers in the market.

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CONCEPTUAL PRINCIPLES OF LEARNING ORGANIZATION

The main purpose of this study is to present conceptual principles of the learning organisation as a modern form of functioning of contemporary organisations and enterprises and the awareness of the dominant role of intangible resources. The most important factor that protects organizations from solidifying is knowledge. In an organization, knowledge is produced by people and these people learn. However, learning alone is not sufficient for the success of the organization. For a lasting and sustainable process, organizational learning is required. Knowledge, on the other hand, is inextricably linked to human capital, which is now the most valuable resource of the new forms of organisation.

Keywords: management, learning organisation, modern enterprise.

1. INTRODUCTION

The focusing of modern economics on the formation, development and implementation of basic learning organizations conceptual provisions points is due to the latest processes in the business environment, in particular: the formation of a knowledge-based economy; intensification of business entities restructuring processes; effective use of intellectual potential and accumulation of intellectual capital in enterprises; the conceptual foundations of strategic planning revision, etc.

The analysis of the most important features of modern enterprise models shows that they optimise their activities based on the maximum use of the concept of a learning organisation. This is because thanks to new applications of human competences and knowledge, the modern enterprise provides itself with a competitive advantage. And for this it is necessary to develop a conscious organisation subordinated to knowledge. It should be noted that the author does not distinguish between the concepts of “organisation” and “enterprise”. It is assumed that both notions can be used interchangeably to describe entities conducting economic activity. A similar opinion prevails among the majority of authors of scientific and research works.

2. LITERATURE OVERVIEW

The concept of the learning organisation emerged in the 1980s and eventually developed in the 1990s (Seebacher, 2002). The increased interest in this issue was closely related to the coming era of the knowledge and information society (Stańczyk-Hugiet, 2005). Today,

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the phrase "learning organisation" is one of the most fashionable concepts, and although many organisations identify with this way of functioning, not all managers yet know what it means or misunderstand it. The learning organisation is now seen as a tool of modern management. The success of a modern organisation depends on the ability to recognise and search for new ways of doing things (Batorski, 1998; Korn i in., 2021). However, this only takes place with the involvement of the organisation as a whole, especially in networked (Skrzypek, 2020) or dispersed organisations (Zaskórski, Zaskórski, Woźniak, 2021).

Consciousness of an organisation (company) is an intangible way of existence of a market entity (legal entity). It is a product of experiencing the market position of the company by the people who make up this entity (Jarosiewicz, 2021). Under these circumstances, the success of the concept of a learning organisation becomes understandable.

The very concept of a learning organisation is defined as an organisation in which learning is a continuous process (Finger, Brand, 1999; Örtenblad, 2018). This process is, as it were, a condition for the life of the organisation (Fig. 1).

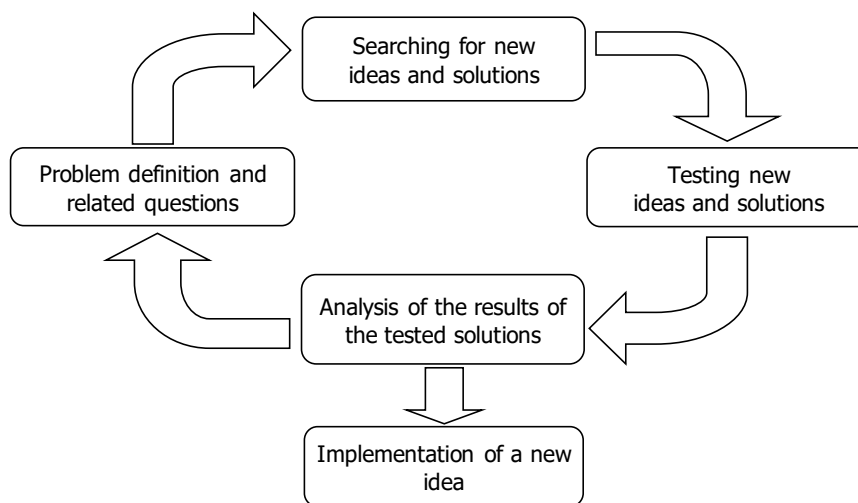


Figure 1. The organisation's learning process

Source: Authors' own elaboration based on (Senge, 1998).

A learning enterprise is one that requires all its employees to learn in order to transform both itself and the environment in which it operates (Bieniok, Głód, 2003). This is because it is about the permanent acquisition of knowledge and skills in planning, organising, motivating and controlling, preparing people to perform the role of company management, and developing individual managerial skills (Bańka, 2002). In such organisations, acquiring new or improving already existing qualifications will determine the professional and social advancement of a large group of employees, the prestige of a new profession, and as a result, progress in various areas of the economy (Bitkowska, Sobolewska, 2020).

3. RESEARCH AND DISCUSSION

3.1. Conceptual principles for organisational learning

It is becoming commonplace to say that the organisations that can consciously compete in the future will be those that discover how to harness human engagement and learning opportunities at all levels, and those whose rate of learning is faster than the rate at which their environment changes.

The challenges posed to the employee by the modern enterprise are the constant need to learn, to acquire knowledge and to change (Fig. 2). The direction of these changes is determined by the assumption that the condition of individual development is change and the constant process of learning through acquiring new knowledge, experiencing new phenomena, learning by doing, by experiencing. Peter M. Senge claims that “True learning goes to the very bottom of what it means to be human. Through learning we transform ourselves, develop our creative capacities, and become part of the creative processes of life” (Senge, 1992).

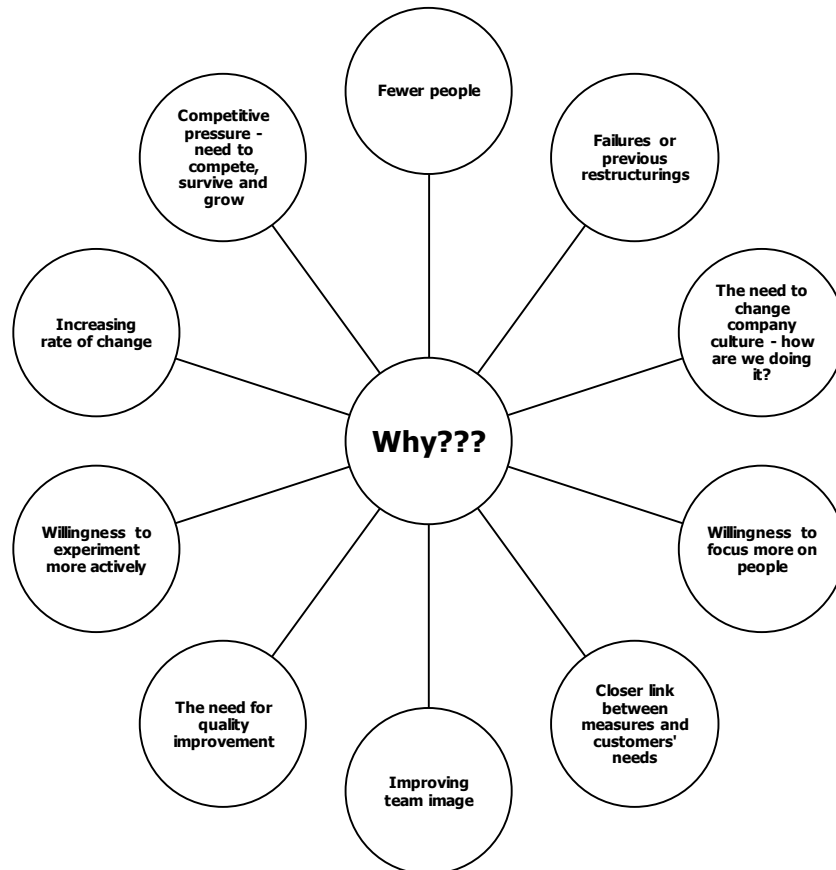


Figure 2. The main conceptual principles of corporate learning

Source: Authors' own elaboration based on (Pedler, Aspinwall, 1999).

3.2. Continuous improvement as the basis for a learning organisation

A learning organisation is not possible without a shared vision that unites all members of the organisation (Jagodziniski, 2018). It must be a vision shared and approved by all employees of the company, not the visions of individuals, owners or managers, imposed on other colleagues (Meen, Keough, 1992; Jackson, 2021). Such collaborative learning is primarily based on: creative rethinking of complex problems so as to achieve synergy; innovative yet coordinated action; and mutual support by members of different teams. Thus, although individual knowledge and skills are used, it is a team discipline that primarily requires dialogue, discussion, communication and trainings (Bańka, 2002).

The strategy of a learning enterprise is based on the ability to own development, to develop new and useful solutions, to create a new reality (Soniewicki, 2019), closing the emerging knowledge gaps (Fig. 3). This is fostered by purposeful motivating, inspiring activities, identifying opportunities for development, experimentation and systematic training (Baruk, 2006).

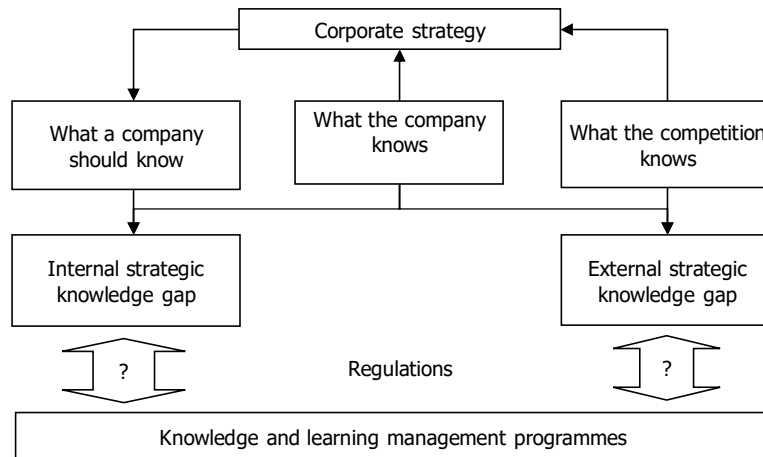


Figure 3. Corporate strategy based on knowledge management and learning processes

Source: Authors' own elaboration based on (Clarke, 2001).

All decisions made in a learning organisation are based on existing knowledge, and each new experience is a basis for extending this knowledge. A learning organisation is based on the intellectual and intuitive potential of all its employees, who strive for its continuous development in order to achieve their own goals². One reacts with equal commitment to the signals sent by the market, in terms of suppliers, customers and competitors, one targets the needs of employees in order to increase their participation in the management of the enterprise (Illiashenko, 2020). Activities are supported that are aimed at continuously increasing the potential of its knowledge. It focuses the efforts of all its participants to

² An excellent example of continuous improvement and organisational learning is the Procter & Gamble company. The marketing strategy used for the 'Tide' brand, introduced in 1947, meant that as late as 1976 the product life cycle was still in the growth phase, with 55 product modifications introduced during this period. More: (Lambin, 2001).

accumulate the most valuable capital, knowledge capital, in order to ensure its advantage over its competitors, manifested by the creation of mechanisms that allow it to effectively exploit changes in its environment (Nonaka, 1995; Bayraktar, 2019).

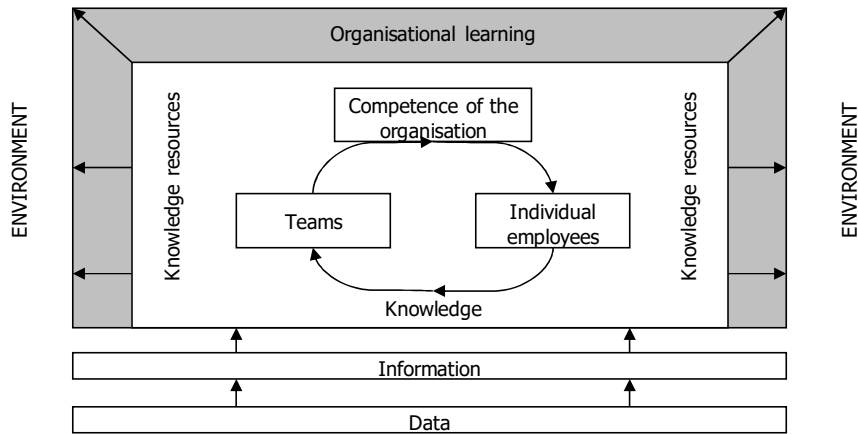


Figure 4. Structure of knowledge resources in a learning organisation

Source: Authors' own elaboration based on (Probst, Raub, Romhardt, 2002).

In order to achieve this goal, changes should be made in the organisation to enable the formation of working groups (teams) focused on solving immediate tasks, depending on the situation (Fig. 4). Ensuring the mobility of employees within the organisation, the possibility to immediately focus on taking advantage of changes in the environment, will be ensured by creating modern, flexible arrangements between individual cells, or rather people gathered around them. The knowledge acquired by the actors of these relationships, or rather the possibility of its immediate use in every part of the enterprise, enables the smooth functioning of the learning enterprise (Chmielewska-Muciek, 2018). In its fundamental dynamics, the organisation has the ability to achieve high rates of entrepreneurship and economic growth, as well as creating the capacity and skills to carry out reconnaissance, skilful adaptation to the environment, innovation and productivity in execution (Batorski, 1998; Alerasoul, Afeltra, Hakala, Minelli, Strozzi, 2021).

3.3. Flexible structure of the learning organisation

An important issue concerning learning organisations is the determination of the characteristics of its organisational structure. In the literature one can find views accepting the “anti-structurality” or “structurelessness” of the learning organisation (Hopej, 2000). However, one can see statements that a learning organisation without structural solutions could not establish its boundaries as relatively unchanging in time and stable. Such an organisation, in spite of its development potential, would constantly jeopardise its sustainability and identity and eventually liquidate itself. Thus neither structure nor learning can function separately. In learning organisations, only the integration of these two elements forms the basis for their existence (Handy, 1998).

The organisational structure is an essential element of a learning organisation, but it cannot be a rigid structure with a high degree of centralisation, formalisation and extensive organisational hierarchy. Such a structure hinders learning by making it difficult to develop a common vision and a shared understanding of organisational problems and teamwork.

The lack of divisions, levels, barriers and the changing importance of strategic resources have forced the emergence of flexible structures, in which divisions are fluid and boundaries between levels and departments permeable, allowing information, resources, ideas and energy to flow freely. Every employee takes part in formulating the company's strategy, which makes it possible to draw on their knowledge and experience and increases employees' personal involvement in its implementation. The decentralised structure of the learning organisation is expressed in the delegation of authority and responsibility according to roles within the organisation (Steinmann and Schreyogg, 1998; Hanif, Anwar, Hamid, 2018).

A learning enterprise is an effective and friendly organisation, because in this enterprise the traditional forms of hierarchy are replaced by loosely linked groups of specialists, who come together on an ad hoc basis to carry out a task, as well as the participation of employees in the management of the enterprise becomes one of the characteristics (Hopej, 2000).

However, a learning organisation cannot do without some kind of hierarchy. In learning organisations we can speak of two levels of management – the central management level and the local level. In this structure, the managers of the local levels have very broad powers, taking total responsibility for the development and activities of their organisational units.

With a very high degree of local autonomy, central management should focus its attention on the essential issue, i.e. shaping the organisation's capacity to learn. In particular, its functions will consist of (Laudon, Starbuck, 2000):

- Managing the organisation's resources,
- Developing main ideas,
- Defining core values,
- Defining and developing the future vision and mission,
- Studying the organisation as a system,
- Designing learning processes.

However, few modern senior managers are able to perform these functions properly and this is one of the main reasons that truly learning organisations are still rare.

An interesting view is held by G. Morgan, who states that hierarchy is a necessary attribute of a learning organisation. It should learn and self-organise like a functioning brain, and this usually involves adapting some sort of hierarchically structured pattern, which is the form of adaptation that an organisation takes when faced with complexity. Hierarchy, however, is not imposed but rather “emerges” (Morgan, 1997).

In learning organisations, managers should take on the role of creating the conditions for others to act. They should allow subordinates to self-direct their own actions within a common set of norms and values that foster a shared identity and learning orientation. At the same time, they must encourage them to question whether these norms and values are an appropriate basis for guiding organisational behaviour. This is because it assumes that shared norms and values need to evolve with changing circumstances.

Furthermore, the structure of the learning organisation must not limit the variety and range of activities to a great extent. It should be based on the principle of function redundancy, which states that “instead of adding spare parts to the system, additional parts are allocated to each of the functioning parts, so that each part can fulfil a range of functions rather than just performing one specialised activity” (Morgan, 1997). Its application in practice generally leads to autonomous work groups whose members have a variety of skills to enable job rotation, and each member has an excess of skills in the sense that they are not fully utilised in the work currently being done. Everyone needs to do something more, to show initiative, responsibility and to go beyond the familiar. The participants in a learning organisation should therefore have only their basic responsibilities defined and a broad field of action outlined on their own.

Therefore, it can be concluded that the structure of a learning organisation is characterised by high flexibility (Jettka, 2018). This is evidenced by a weakly marked hierarchy, broad powers of the executive level, little specialisation and formalisation of activities. These structural arrangements of learning organisations are flexible due to the not very clear dividing lines between superiors and subordinates, customers and suppliers, the organisation and the environment, and an efficient information system providing the requested information to the appropriate hierarchical levels – where it is needed (Zimmiewicz, 2003).

3.4. Main barriers and benefits of organisational learning

The conscious implementation and realisation of the concept of organisational learning encounters many barriers and limitations. These constraints cause the organisation to learn the wrong things (Hatch, 2002).

The main barriers of organisational corporate learning can be divided into (Czapla, Malarski, 2005):

- Psychosocial – lack of trust, unwillingness to cooperate, lack of openness, communication problems,
- Cultural – lack of identification with the vision, mission and objectives of the company, lack of activities to support knowledge sharing, lack of a sense of community,
- Technical – lack of technical and IT infrastructure to transmit and collect data,
- Organisational – rigid and hierarchical organisational structure, bureaucratic forms of employee cooperation, lack of procedures and mechanisms for knowledge sharing.

Participation in organisational learning processes also has a number of positive benefits for both the employee and the enterprise. Table 1 shows the potential benefits for the employee – as an individual, and the enterprise – as an organisation.

An approach focused on releasing employees' creative abilities, consequently leads to improving the organisation's efficiency, and thus to achieving a competitive advantage on the market (Fig. 5).

Table 1. The benefits of learning from the perspective of the employee and the company

Potential benefits for employees	Potential benefits for the organisation
<ul style="list-style-type: none"> • Thoughtful and well-founded knowledge, useful in a variety of changing conditions • Development, self-realisation • Exchanging knowledge and experiences - enriching and confronting one's own beliefs with those of the group members • Functioning in an organisation that challenges itself and its participants • Learning processes increase individual knowledge, which is important for the development of individuals • Gaining real authority based on unique knowledge and skills • Learning through the exchange of opinions, comments, reflections increases the knowledge base • Examples and concrete actions, replacing theoretical knowledge, develop skills, habits • Improving analytical skills • Acquiring practical knowledge, solving problems when they arise 	<ul style="list-style-type: none"> • Proactive and anticipatory behaviour • Specific organisational climate based on teamwork (synergy) • Development and building of a competitive advantage based on distinctive competences • Process of knowledge transfer and accumulation • Building generic competencies • Development of learning systems and their control • Achieving objectives and implementing strategies • Building organisational knowledge resources for use in new and unforeseen situations • Formalised learning processes provide assurance of learning within formal boundaries • Lack of formal learning systems can be a source of dynamic development of organisational knowledge assets • High performance as a result of practical applications of knowledge resources • Learning orientation for continuous improvement and success motivation • Building organisational knowledge assets and managing knowledge • Learning while doing gives a resource of practical applied knowledge • Commitment to learning, development of learning programmes, acquiring knowledge in predefined areas • Resources for organisational knowledge, often tacit, which can potentially be externalised and used by the organisation

Source: Adapted from (Stańczyk-Hugiet, 2005).



Figure 5. Impact of knowledge, skills and qualifications of employees on the competitiveness of the company

Source: Authors' own elaboration based on (Czerniachowicz, 2003).

A learning enterprise is based on assumptions that emphasise the importance of human capital. Therefore, it releases the creative abilities of employees, increases their personal motivation, which leads to an improvement in the effectiveness of the company. This influences the realisation of goals convergent for all employees, which are: gaining a competitive advantage in the company's environment and increasing its competitiveness (Adamkiewicz, 2000).

4. CONCLUSIONS AND RECOMMENDATION

Knowledge is the basis for the existence and functioning of any conscious organisation. It seems, however, that it is in the learning organisation that knowledge takes on special significance. Without knowledge and its appropriate management, a learning organisation would not exist. It is the acquisition of knowledge and its subsequent use in practice for the benefit of the organisation and its employees that leads to continuous improvement, the development of skills to make them better and better and thus lead to the development of the organisation and its participants. This approach also requires conscious leadership (Krasnosielski, Nowak, 2021), as no development is possible without knowledge and its continuous improvement.

The process of conscious education is obviously inseparably connected with knowledge, its acquisition, transfer and accumulation, i.e. all that is included in the concept of "Knowledge Management" (Pedler, Aspinwall, 1999; Helbig, Hofhues, Egloffstein, Ifenthaler, 2021). As a learning organisation relies on the key talents of its employees, on their explicit and tacit knowledge, it becomes necessary to constantly supplement, update and create it in order to keep up with the constantly changing world, technologies, operating and business conditions (Fig. 6).

The ability to learn quickly is proving to be the only sustainable competitive advantage. It is no longer possible to set goals at the top of a hierarchy and tell others to follow. Instead, the winners of the future will be those organisations that discover how to harness their members' commitment and learning capabilities at all levels.

Modern companies can be effective and employee-friendly if they find a way to change their internal working relationships from antagonistic to partnership, integrating employee teams around the core problems and challenges that the company faces in a turbulent contemporary environment. And allowing employees to participate in the management process definitely contributes to the realisation of such intentions.

Conscious use of the potential inherent in employees, creation of conditions for sharing knowledge and improving qualifications by members of the organisation directly influences the effectiveness of management in companies and an increase in work productivity, which contributes to the development of enterprises and, on the market, an increase in their competitiveness.

Thanks to the fact that a learning organisation has up-to-date information and the latest knowledge, it is able to use these resources to gain a competitive advantage and ensure its survival. Such an organisation quickly adapts to the changing environment, is open to change and is ready to reject all templates for predictable action by the competition.

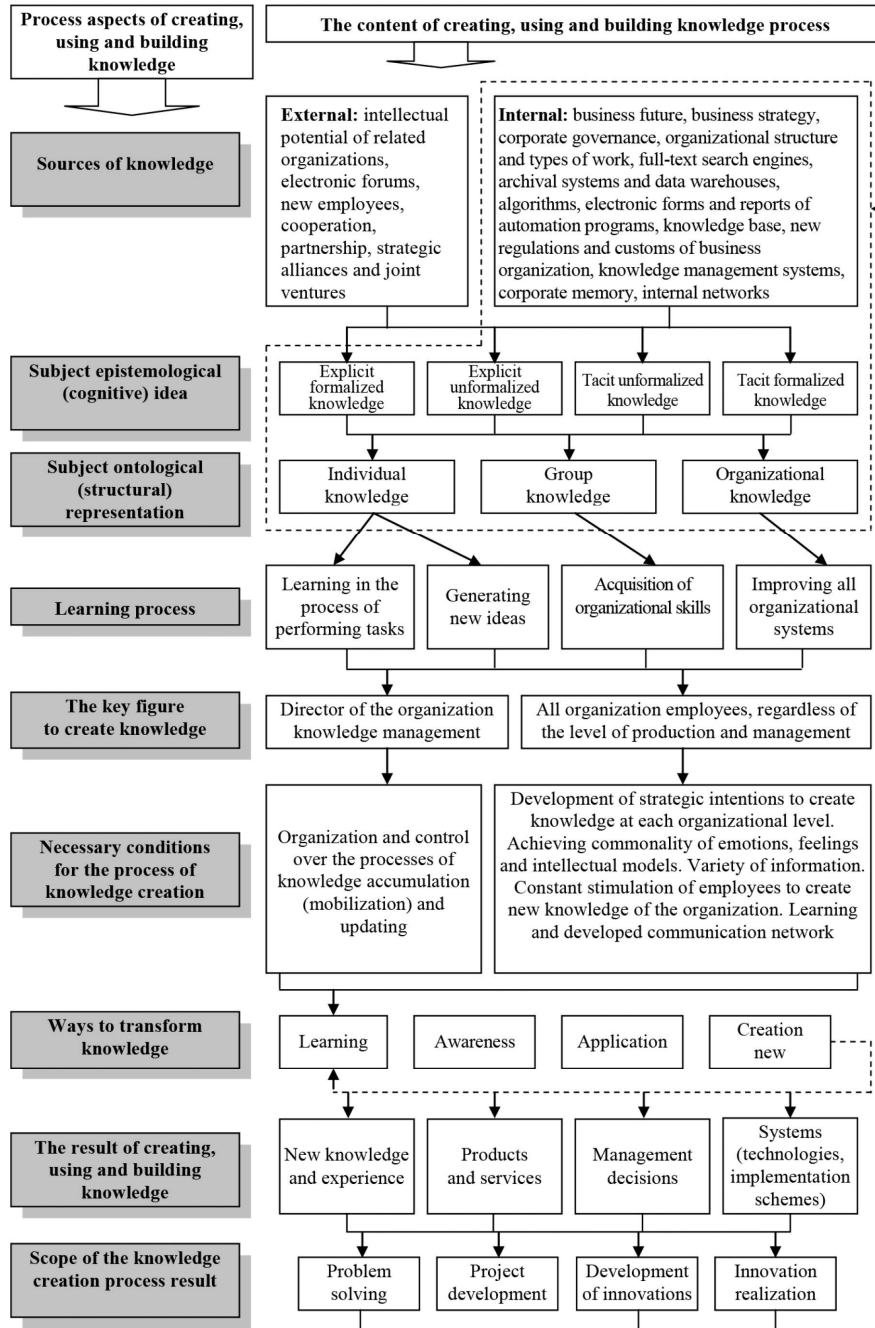


Figure 6. The mechanism of learning organization knowledge creation and use

Source: (Ostrowska, Sherstiuk, Tsikh, Demianyshyn, Danyliuk-Chernykh, 2021).

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SELECTED INNOVATION TOOLS IN DESIGNING PROCESS MANAGEMENT³

This contribution deals with the specification of the current immunity of strategy and status and level of procedural management in special organizational structures referred to as industrial clusters. It represents selected specifics of the design and application of innovative tools, system integration, and agile project management of clusters. It describes and explains the context between the strategy, the organizational structure, and the need for project procedural management at the current position and competitiveness of clusters on the market in demanding energy and environmental conditions. In the end, it shall submit its own author's design scheme for a new organizational project aimed at a cluster structure and draft management process and coordination of clustered projects for their clients.

KEYWORDS: Innovation tools, cluster structure, procedural management, project management, system integration.

1. INTRODUCTION

According to the nesting theory of M. E. Porter, clusters are an organizational form and a tool of geographical concentration of interconnected companies, institutions, specialized suppliers, and service providers as well as partners in order to prioritize mutual cooperation over sophisticated competition (Kotler & Keller, 2013). Characteristic of such a situation is that the projects have a shorter implementation time of 3 months to 1 year; reasonable financial volumes and costs for the project with lump sums; a small number of universally skilled people in teams; precise and specific work plan and timetables; cluster managers are often also project managers and project teams work in daily contact; the processing of project tasks and tasks usually takes place individually and manually; communication channels are shorter, decision-making is fast, team members get to know each other sooner, and in more detail, motivational factors are more flexible and targeted estimates and studies (ideas) of projects, which are the basis for planning, are much more accurate and simpler, as it is possible to better know specific conditions and the overall history and needs of the

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customer and which project (Magretta & Stone, 2013). Objective and content of the contribution (Fotr & Souček, 2011):

- a) Specification of the current understanding of the strategy and the state and level of process management in cluster structures.
- b) Design and application of selected innovative tools and system integration in cluster management.
- c) Peculiarities of project process management and definition of conceptual apparatus.
- d) Examining the relationship between strategy, organizational structure, and the need for project process management for the competitiveness and innovation of clusters.
- e) Own author's scheme of design of a new organizational, project-oriented cluster structure.
- f) Design of the process of management and coordination of projects implemented by clusters for clients.

2. ORGANIZATIONAL STRUCTURE AND PROJECT MANAGEMENT PROCESS MANAGEMENT

However, this advantage and relative simplicity is also a possible source of some problems (Karabáč et al., 2020) that can arise in the process management/project management of the cluster, namely: conflicts of interest and priorities for project managers and the team leader, as well as the lack of affordable specialists and alternative alternatives in the project; even if the specialist is deployed, the scope of the project will not allow him to fully deploy; it is often partially redundant, time-consuming and costly and inefficient; greater sensitivity of the cluster and project team members to conflicts and risks, or disagreements in the professional approach to the content of projects and at the same time paradoxical informal relationships can be an obstacle in the work discipline; possible delays or shortcomings in any of the managed projects may have a negative impact on other projects (consistency, coherence, etc.) (Hromková & Holočiová, 2005).

The author of this article perceives clusters as a modern and successful tool for innovation and strengthening the competitiveness of Slovakia, and for a long time, he has been dealing with the subject of the paper in the context of extensive research and publishing activities.

Basis and knowledge of criteria:

- a) Industrial production and construction, energy, and environmental problems are long-term socially, industrially, and existentially crucial, and their coexistence affects new innovative solutions for cluster organizations.
- b) Innovations change the structures of clusters and companies – the consequence of interventions, personnel changes, and changing needs and expectations of clients in the market.
- c) Project process management of activities in organizations is the main activity of management.
- d) Management processes and especially production have a key position among the components of the management model.

Project process management is a special and specific way of management, the essence of which is the planning, organization, and management of activities and their resources within the solution of a specific investment, business, product, or construction project for a particular client in order to achieve maximum effect. A process is commonly understood

as a process (e.g., a technological process, litigation, a financial process). By this procedure, the authors understand a series of consecutive activities, where each sub-activity (elements of this series) is organized mainly functionally (Svozilová, 2011). Every organization that has implemented process management must continuously improve the individual processes and evaluate their efficiency and effectiveness. If we want to improve the process, we must keep it under control, so that it must first be planned, then implemented, and finally monitored. The process, which is not continuously improved, deteriorates, and its effectiveness decreases as the competition develops (Fotr & Souček, 2011). Process management – can be understood as a management approach focused on monitoring existing processes, their analysis, possible changes, stabilization, or further improvement (Novotný, 2017). Processes, especially management processes and also production processes, play a key role among the components of the management model. For clusters to work, they must therefore define and manage many interconnected processes. The organization and management of processes depend on how efficiently the activities leading from the acquisition of orders to their satisfaction are carried out, how complicated or logically the auxiliary operations are performed to the main processes. Table 1 defines the types of integration and the interests and principles of implementing process management in cluster structures as follows:

Table 1. Integration and implementation of process management

THE TYPES OF INTEGRATION AND INTEREST IN THE PROCEDURE APPROACH ARE IN:	THE MAIN PRINCIPLES FOR THE INTRODUCTION OF PROCESS MANAGEMENT CAN BE DETERMINED AS:
Operations integration – the basis for team management. At present, a more well – educated worker is gaining more attention than a one – sided, low-educated worker.	Starting a new organizational cluster culture – to teach the whole team and management to think process. The process begins with training and teaching.
Integration of customers into the cluster production process. The customer can comment on how he wants to have the product or service configured and only then gives the signal for production.	Reassessment of the internal management system – elaboration of a new cluster strategy and the subsequent new creation of a new organizational structure
Supplier integration into the production process. The supplier becomes a direct part of production and services and is not just a supplier of individual components.	Redesign of management processes - elimination of unnecessary and duplicate activities; complementing missing activities and innovating inefficient activities

Source: authors' work.

Project process management: It is a special and specific way of process management, the essence of which is the planning, organization, and management of activities and their resources within a comprehensive project while respecting time, resource, and cost constraints, in order to achieve the maximum economic effect. It differs from the line or staff management style mainly in temporality, dynamism, and allocation of resources for its implementation (Svozilová, 2011, Veber, 2014). The goal of project management is then to ensure the planning and implementation of a specific successful project in the cluster, which means the case when the project goals were achieved in the planned time and with

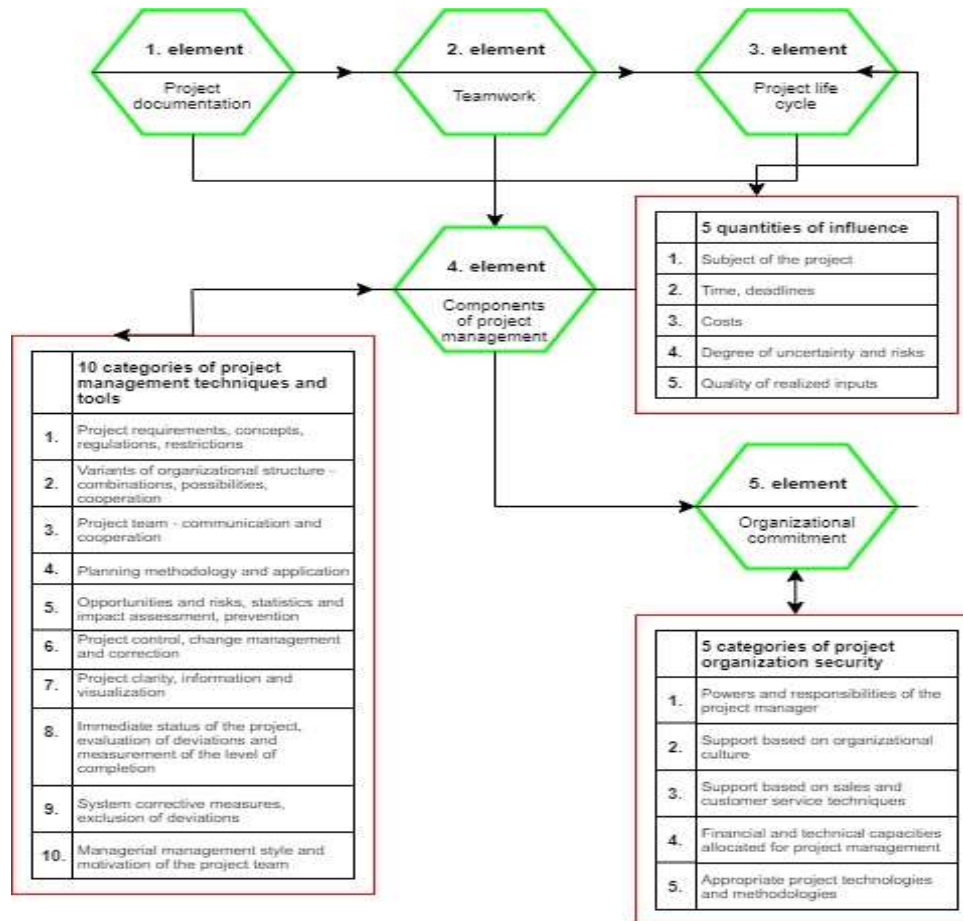


Figure 1. Basic elements of cluster project management

Source: (Plamínek, 2018; authors).

the planned costs. Project management is based on the knowledge that once the scope, complexity, riskiness of the project exceeds a certain level, it is necessary to use adequate methods to manage the entire project (Koporová, 2020, Svozilová, 2011). The main element of any project and management is the project itself (Plamínek, 2018). It is a unique sequence of activities and tasks, which has: a given specific goal to be fulfilled after its implementation; defined schedule and deadlines; the established framework for drawing funds and the regime of pre-financing of the project subject itself (construction of the work, implementation or installation of technology, investment procedures, etc.). From this finding, we can realistically deduce that the project is actually a temporary effort made to create and implement a unique engineering – technical product or service with a defined result, exclusively for the customer. Then the product (result/output) of the project is the goal, result, or other material determinants that are to be created by the project implementation. New professional demands on the team and managerial workforce and

growing expectations mean that clusters have to consider changing the conventional way of thinking and move to more efficient ways of process management. However, unless the necessity of the change is determined, it is not possible to determine the purpose and method of making the change. According to Figure 1, the basic elements of the project process management itself can be decomposed as follows.

Such questions need to be asked before any attempt to change and design a new process management based on the knowledge and analysis of the authors' research to date, based on theory (Magretta & Stone, 2013; Veber, 2014), applying the ten general principles of successful change management. According to these principles, one of the most effective changes seems to be the fundamental management of internal cluster management processes (Table 2). The transition to new management methods is also made possible by new innovative approaches and new information technologies, which are part of the management information system and the subject of a separate, relatively extensive policy to support cluster management in the future (Novák, 2017). At the same time, this development should focus on quality and improvement (innovation and new approaches) in cluster projects and products.

Table 2. Ten valid principles of successful change management

PRINCIPLE 1	Top management plays a key role in managing change.
PRINCIPLE 2	Developing a vision that must be clearly articulated and understandable to all.
PRINCIPLE 3	Awareness of the need for change (it must be clear to everyone that change is a condition for success, even if everything works).
PRINCIPLE 4	Elaboration of a specific project, which will be used to proceed with the change of the cluster organization.
PRINCIPLE 5	Necessity of continuous education with all employees of the organization.
PRINCIPLE 6	Team approach (changes are not made by individuals, but by project teams).
PRINCIPLE 7	Elaboration of a project of gradual implementation of change.
PRINCIPLE 8	Monitoring, evaluation and correction of all activities so that any deficiencies identified can be remedied.
PRINCIPLE 9	There must be open, ongoing communication between management and other employees.
PRINCIPLE 10	It is advantageous to cooperate with external consultants as partners in the implementation of the change.

Source: authors' work.

3. DESIGN OF PROJECT PROCEDURAL MANAGEMENT INSTRUMENTS OF INDUSTRIAL CLUSTERS

The processes themselves are provided by the cluster administration (which means monitoring costs and managing effective sales techniques, technical preparation, and care for resources and assets) and at the same time it is a service staff component for the cluster production and service system (Novotný et al., 2020) for project teams, but mainly for customers – which covers marketing and sales, management and service activities and corporate image. In the hierarchy of process project management, the overall logistics of operation is superior to production – procurement of inputs to projects and products, innovation and development of solutions for the market, as well as planning and distribution

routes in the cluster's customer portfolio. The culmination of such an organizational structure is the strategy itself with its goals, vision, and tasks in the creation and implementation of projects, which is provided by project management and affects the overall organizational culture, presentation, and image of the cluster and its ethical and social background and position. If the specifications of the main competencies of the cluster organization are already determined, all the necessary links and system elements arise for setting up a clear and simple design of the project management and coordination process in the cluster, which evokes the design scheme of the new organizational structure 2.

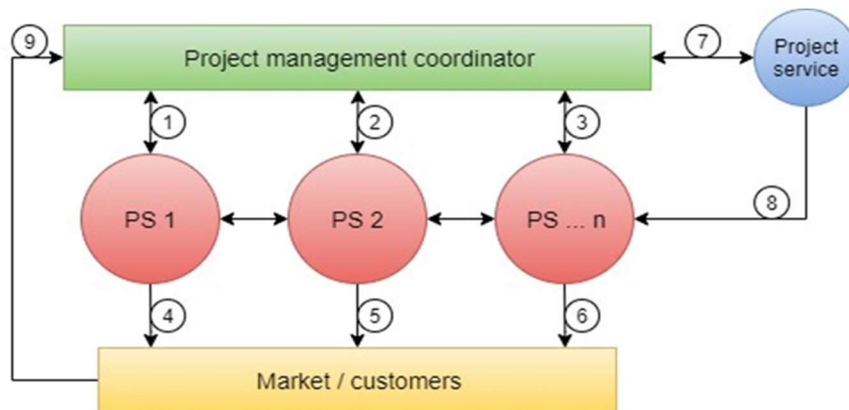


Figure 2. Scheme of design of a new organizational structure of a cluster organization
Source: authors' work.

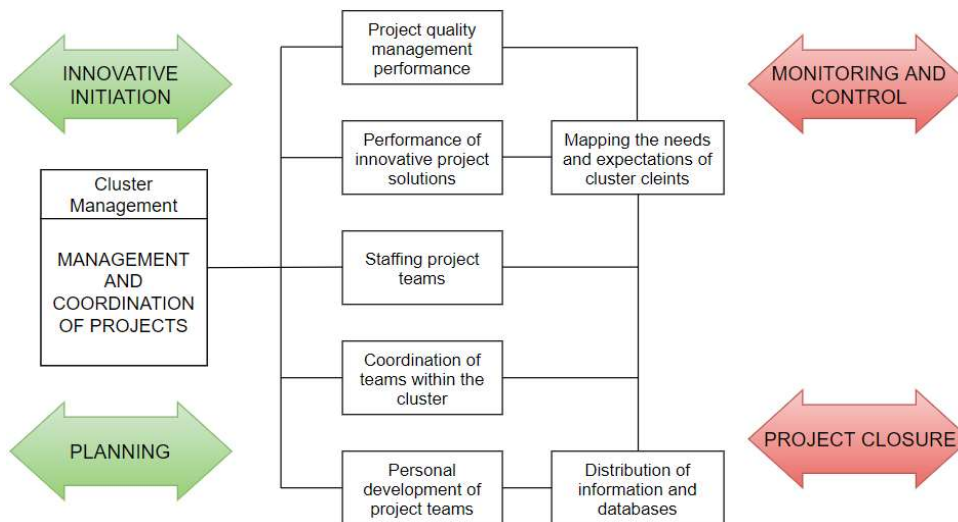


Figure 3. Project management process design and coordination in clusters
Source: (Novotný, 2017; authors).

The principle consists in the abolition of the structure based on staff functions with a fixed content and competencies and the creation of a relatively free organizational structure with the decisive position of individual project/executive groups PS 1, PS 2, to PS ... n, which freely and relatively independently provides crucial cluster activities. (Projects, orders, consulting, processes, etc.) and their cooperation and coordination is ensured by the management in the position of universal coordinator. A part of this organizational system is also a separate team, understood as a project service, providing economic, legal, administrative and other security and service activities at the same time for all PS. The author's design of the diagram of the process of innovative project management and coordination for the needs of the solved cluster organization can be seen in these contexts and system elements (Figure 3).

The proposal sufficiently responsibly [9], unambiguously, and exhaustively describes the supporting elements and links between them in the conditions of two-stage project management and engineering activities in clusters for customers and is the authors' application with modifications of the already verified solution. At the same time, it is appropriate to emphasize the fact that the result of project process management as a combination of invention and forces is and will always be the commitment of the cluster organization to research, technological development, production, and innovation for industrial investment and commercial use by its member firms.

4. CONCLUSION

The paper briefly and clearly describes the current state of process management of clusters in connection with their innovative possibilities and proposes 10 essential value principles for assessing the state of clusters, the scheme of the new organizational structure and the project management process, and their coordination in cluster organizations. Management of projects specializing in industry, construction, manufacturing, and especially energy and ecology in large and international companies and holdings is a common phenomenon, but in cluster groups and their companies (members) that deal with the project, the most common differences are the so-called. "Mega – enterprises" in one-off creative activity (in the case of a project designed for their own needs) or in short-term, recurring, or overlapping activities (in the case of management service for customer projects). Therefore, the study and design of models, manuals, and tools to support project process management is becoming an important area of research and support for the competitiveness of industrial cluster organizations in the future and needs to be addressed and addressed extensively.

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SUCCESSION PLANNING AS A CRITICAL MANAGEMENT IMPERATIVE: A SYSTEMATIC REVIEW

This paper conducted a systematic review of succession planning (SP) articles published over the last decade. The Systematic Quantitative Assessment Technique was used to identify 174 SP articles. The review covered five key issues: 1) Time distribution, 2) Geographic distribution, 3) Article type, 4) Data collection methods, and 5) Themes explored. The findings revealed that interest in SP fluctuated over the last decade, and that South America and Oceania were the least represented by SP scholarship. The spread between conceptual and empirical SP articles were skewed towards the former, and survey was the most popular data collection method. Five themes were identified, with the most striking finding being that if the ‘going concern’ principle of organizations is to be achieved, management must make deliberate efforts to formalize the SP process with the clear understanding that it is a continuous, transparent and participatory process, and thus a crucial management imperative.

Keywords: Succession planning, Systematic review, Management imperative, Going concern.

1. INTRODUCTION

According to the ‘going concern’ principle of accounting, once an organization is established it is expected to continue to operate indefinitely unless there is evidence to the contrary (Savova, 2021). The reality of course is that these organizations are run by human beings who are anything but indefinite. As the saying goes, the only constants are death and taxes, and all human beings are destined to die at some point in time. The fragility and vulnerability of the lives of human beings has been brought into sharp focus by the ongoing COVID-19 global pandemic that has led to the death of over three million people in only a year and a half (World Health Organisation, 2021). Santora (2020, p.4) explains this phenomena eloquently as follows: “COVID-19 is an equal-opportunity, non-discriminating

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killer. It knows no boundaries, ages, genders, races, creeds, or religions". From an organizational sustainability point of view, the deaths caused by the COVID-19 pandemic has elevated the concept of succession planning up to the top of the list of global management consciousness (Firfiray, Gomez-Mejia, 2021). This is because the sudden demise of key personnel in organizations leads to a loss of invaluable corporate knowledge that can have devastating effects on the long-term survival of any organization particularly given how competitive and turbulent the global business landscape is (Arslan, 2021).

Succession planning refers to a deliberate and systematic process of ensuring the storage of valuable corporate knowledge needed for business continuity by identifying and grooming future leaders who can replace current leaders when they die, retire or leave the organization (Soares et al., 2021). This process, which is also known as 'replacement planning', typically begins through a thorough evaluation of the skill-sets of all senior members of management (Bano et al., 2021). This is followed by identifying members of middle management that have the potential of replacing senior management in the future (Bano et al., 2021). These potential replacements are then trained to develop and hone the skills necessary for them to step into leadership positions when the situation calls for it (Bano et al., 2021). The succession planning process is thus a continuous one rather than a one-time activity; it requires annual updating and re-evaluating in response to the current happenings in the organization's internal and external environment (Hayden et al., 2021).

A well-executed and formalized succession planning process is expected to provide several benefits to an organization. Firstly, when succession is based on transparent and merit-based criteria, it can serve as a great motivational tool among employees who can see a clear path to advancement within the organization; this in turn empowers them to work harder and can lead to increased job satisfaction (El Badawy et al., 2016). Secondly, a clear succession plan also encourages senior members of management to become mentors and teachers to their younger counterparts as a deliberate strategy of transferring knowledge and expertise which contributes greatly to business continuity (Weisblat, 2018). Thirdly, a formalized succession plan enables the organization to properly measure the value each employee provides, and this makes internal promotions much easier (Best, 2016). Fourthly, as the current leadership crop of baby boomers begin to retire, a new generation of leaders will be needed in the very near future, and having a formal succession plan means that an organization is ready to deal with this inevitable reality (Martin, O'Shea, 2021). Finally, from the point of view of shareholder-owned organizations, having a formal succession plan gives shareholders confidence that experienced people are being groomed to ensure the smooth running of the business if and when something happens to the current leadership (Sain, Koul, 2020).

Given the critical importance of succession planning (SP) for the long-term sustainability of an organization, this paper conducted a systematic review of the last decade of scholarship on this important management imperative so as to answer five research questions: 1) Has scholarly interest in SP increased or decreased over the last decade, 2012-2021? 2) What has been the geographical distribution of SP scholarship over the last decade? 3) Has the focus of SP scholarship being conceptual or empirical? 4) What data collection methods have been used in SP scholarship in the last decade? 5) What themes have extant SP scholarship explored in the last decade? These questions were answered via a thorough review of 174 succession planning articles published by reputable academic journals in the last ten years.

The rest of the paper proceeds as follows: First the method adopted by this paper in conducting its systematic review of SP scholarship is presented. This is followed by a presentation and discussion of the results and of the output of the systematic review as it relates to this paper's five research question. Discussions of identified research gaps are also included in this section. The paper ends with a concluding section which summarizes the key findings of the review, the paper's limitations and recommendations for future SP systematic reviews.

2. METHOD

This paper utilized the systematic quantitative assessment technique (SQAT) developed by Pickering and Byrne (2014) to conduct a systematic review of SP scholarship over the last ten years, 2012–2021. The SQAT recommends a five-step process for conducting an effective systematic review: 1) Define your topic, 2) Formulate your research questions, 3) Identify key words, 4) Identify and search databases and 5) Read and assess publications.

For this study, the topic was simply “success planning articles published in the last ten years”, while five research questions were formulated as follows: 1) Has scholarly interest in SP increased or decreased over the last decade, 2012–2021? 2) What has been the geographical distribution of SP scholarship over the last decade? 3) Has the focus of SP scholarship being conceptual or empirical? 4) What data collection methods have been used in SP scholarship in the last decade? 5) What themes have extant SP scholarship explored in the last decade?

Table 1. SP articles reviewed categorized by academic database

S/N	Database	Number of SP articles
1.	African Journals Online	1
2.	Citeseer	6
3.	Elsevier	15
4.	Emerald	27
5.	Harvard	1
6.	HeinOnline	18
7.	IGI-Global	8
8.	Inderscience	6
9.	JSTOR	2
10.	Kluwer	2
11.	Oxford	3
12.	Sage	16
13.	Springer	30
14.	SSRN	2
15.	Taylor and Francis	17
16.	Wiley	20
	TOTAL	174

Source: own study.

In order to search for relevant articles, “succession planning” served as the key phrase to guide the search process on Google Scholar. Sixteen reputable academic databases were selected from which relevant articles on SP were selected. In total, 174 SP articles published in the last decade were selected for review in this study and Table 1 presents the breakdown of these articles based on academic database; the search for articles concluded on April 30, 2021 and thus SP papers published after that date were not captured by the review.

The next section of the paper presents the findings of the systematic review as it relates to each of the five research questions formulated in this paper.

3. RESULTS AND DISCUSSION

3.1. Has scholarly interest in SP increased or decreased over the last decade, 2012–2021?

Figure 1 presents the number of SP articles published in the 16 databases utilized for this review. In order to answer this paper’s first research question, the number of papers published in 2021 are not considered as only articles published in the first quarter were considered.

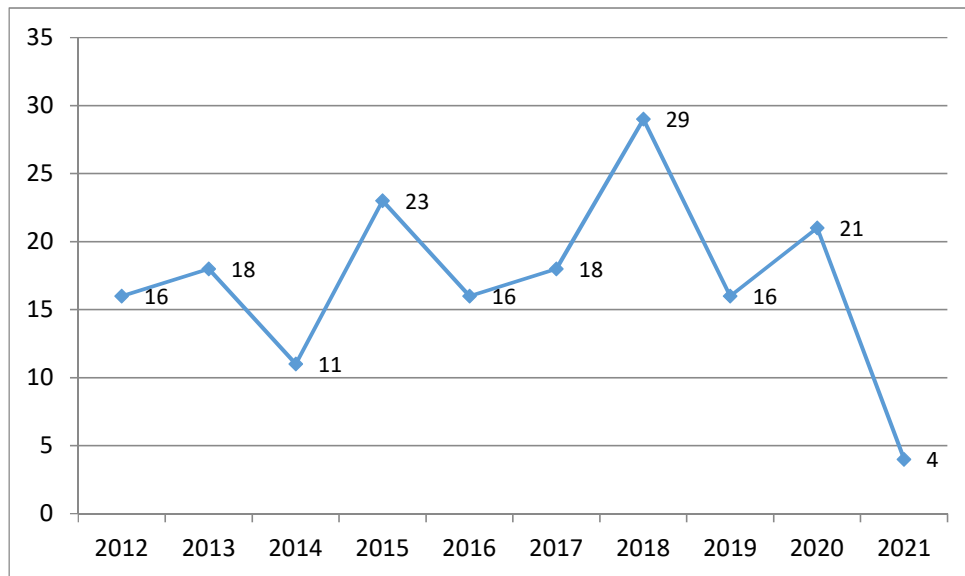


Figure 1. Time distribution of SP articles published over the period, 2012–2021

Source: own study

It can be observed that scholarly interest in SP has waxed and waned over the ten-year period covered by this systematic review. Discounting 2021 which is incomplete, the peak of scholarly interest in SP was attained in 2018 with 29 articles published while the lowest output was in 2014 with only 11 articles published in the whole of that year. The year 2020 was the last complete year considered in this review, and 21 SP articles were published in the 16 databases considered in this paper.

3.2. What has been the geographical distribution of SP scholarship over the last decade?

In this section, the geographical distribution of SP scholarship is presented in two categories, continent by continent distribution and then a country by country distribution. Figure 2 presents the continent by continent distribution of the SP articles reviewed in this paper.

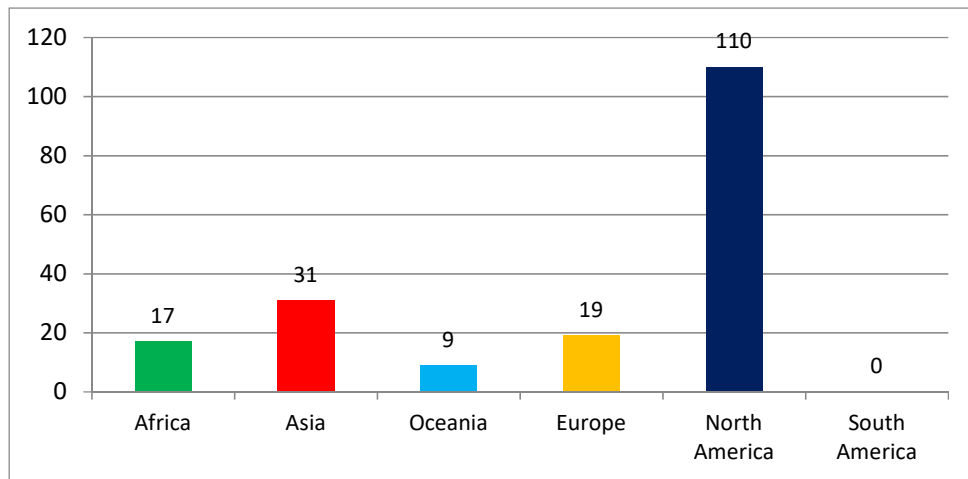


Figure 2. Distribution of articles by continent

Source: own study.

It can be observed from Figure 2 that North America had by far the largest number of SP articles reviewed in this paper with 110. Asia was a distant second with 31, followed by Europe with 19 and Africa with 17. Oceania had 9 articles while South America had no representation. There are 13 countries in South America and it is surprising that no SP article reviewed in this paper emanated from any of these countries. One might argue that it is because the languages spoken and written in these countries are typically Spanish or Portuguese and this paper only concentrated on SP articles written in English. However, this argument does not hold water as Asia had the second most SP articles and countries in this continent do not have English as their mother tongues. The obvious recommendation for future research based on the findings shown in Figure 2 is that more SP research has to be done in South America so as to provide perspective as to how SP occurs in the countries that make up the continent. This research gap is particularly pertinent considering the fact that since the beginning of the global COVID-19 pandemic, there has been an increase in the number of South American businesses seeking professional support in the establishment of formal succession plans (Wealthadviser, 2021).

From a country perspective, 39 different countries had at least one SP article, and Figure 3 presents the five countries with the most SP articles in this review. The United States of America was by far the most represented country in this review with 101 SP articles. India had less than a tenth of the number of American-based SP articles with 10, followed by Australia with 9 and the United Kingdom with 6 articles. Canada rounded up the top 5 SP

countries with 5 articles. Table 2 presents the remaining 34 countries arranged in descending order based on the number of SP articles from each country.

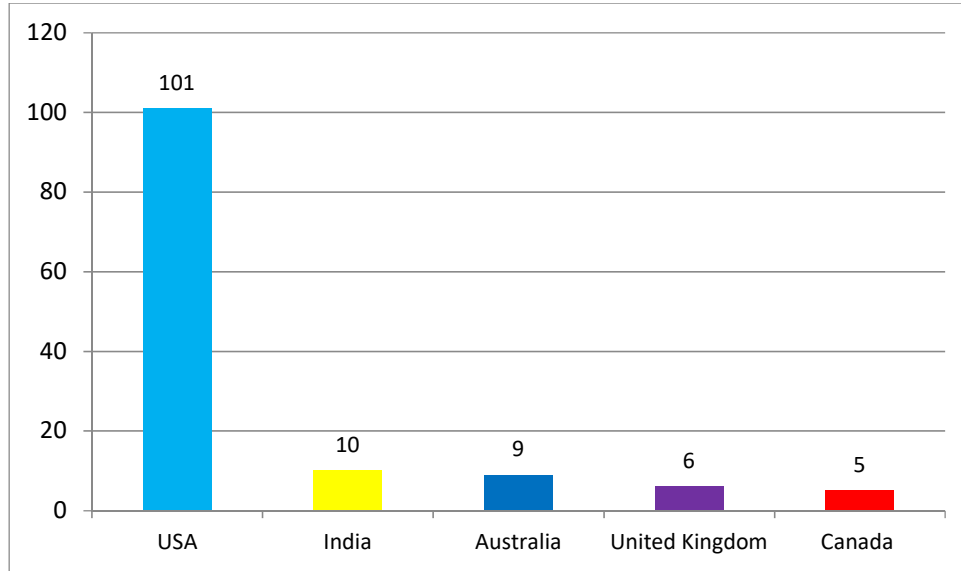


Figure 3. Five countries with the most SP articles

Source: own study.

Table 2. Remaining 34 countries with at least one SP article

S/N	Country	Number of SP articles	S/N	Country	Number of SP articles
1.	Nigeria	4	18.	Israel	1
2.	Pakistan	4	19.	Italy	1
3.	South Africa	4	20.	Kenya	1
4.	China	3	21.	Kosovo	1
5.	Egypt	3	22.	Lebanon	1
6.	Belgium	2	23.	Mexico	1
7.	Germany	2	24.	Morocco	1
8.	Iran	2	25.	Portugal	1
9.	Jamaica	2	26.	Scotland	1
10.	Kuwait	2	27.	Spain	1
11.	Malaysia	2	28.	Sudan	1
12.	Tanzania	2	29.	Sudan	1
13.	Vietnam	2	30.	Sweden	1
14.	Croatia	1	32.	Switzerland	1
15.	Cuba	1	33.	Thailand	1
16.	France	1	34.	United Arab Emirates	1
17.	Ghana	1			

Source: own study.

According to Worldometer, there are 195 independent countries that constitute Planet Earth. In this SP review, only 39 of these 195 countries were represented which indicates that over the last ten years covered by this review, English-based SP scholarship has only proliferated 20% of countries in the world. The remaining 80% provide fertile ground for future SP scholars to explore as all these countries have businesses that practice succession planning in some form or another.

3.3. Has the focus of SP scholarship been conceptual or empirical?

For this paper, conceptual papers referred to those SP papers that provide view points or recommendations on how SP could be developed or improved upon in different kinds of organization; these articles did not collect any form of data but rather relied on the opinions of the authors. On the other hand, all SP articles that involved any form of data collection were categorized as empirical articles. Based on this classification, Figure 4 presents the classification of the 174 SP articles reviewed in this paper based on whether they were conceptual or empirical.

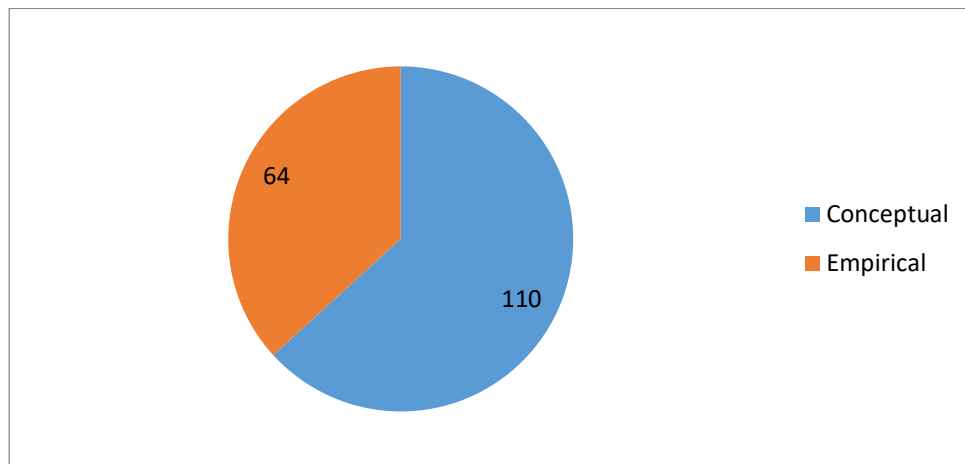


Figure 4. SP articles by type (conceptual vs. empirical)

Source: own study.

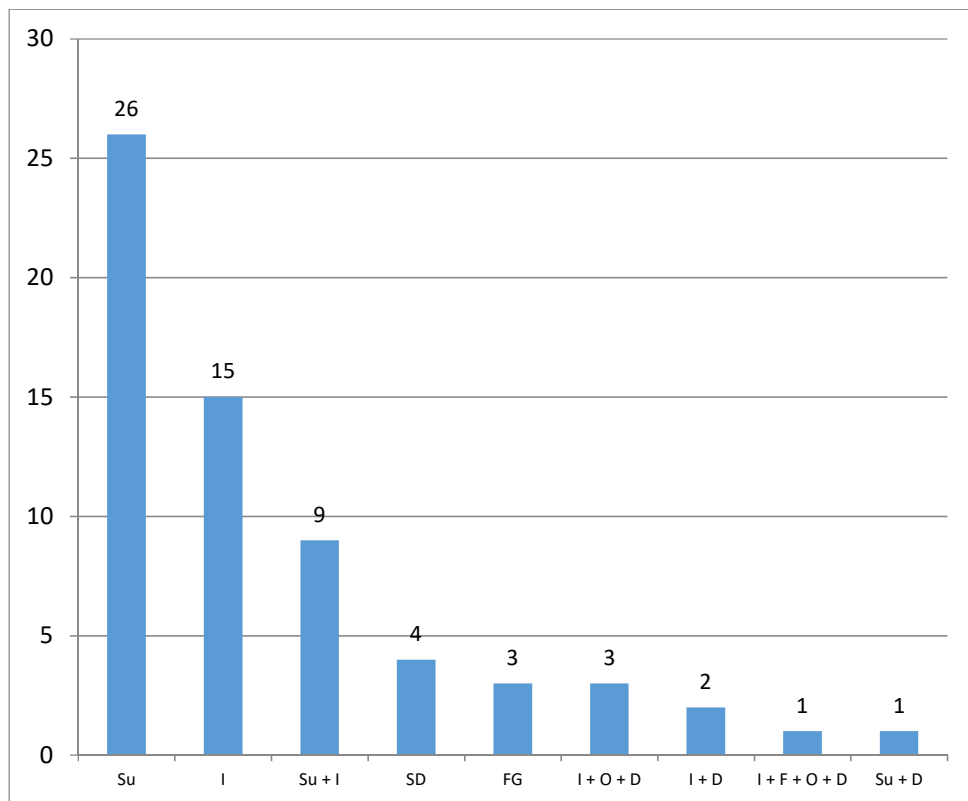
Figure 4 shows that the majority of the SP articles revealed (110 out of 174; 63%) were conceptual in nature with the authors providing different explanations as to why SP was important for the long-term sustainability of organizations (e.g., Spina, Spina, 2020; Tietjen-Smith et al., 2020; Bakare, 2021). These articles also provided recommendations on how to formalize, improve and enhance the SP process (e.g., Creta et al., 2020; LeCounte, 2020; Opute, 2020). On other hand, 37% of the articles reviewed (64 out of 174) sought to assert the efficacy of some of these recommendations in organizations via the collection and analyses of different kinds of data (Arslan, 2021; Lu et al., 2021; Phillips, 2021).

Figure 4 indicates an obvious imbalance in extant SP scholarship in the last decade with suggested SP ideas far surpassing the actual empirical testing of these ideas. Future SP

researchers should thus focus more on validating the many scholarly SP suggestions and recommendations that have been put forward by current scholars.

3.4. What data collection methods have been used in SP scholarship in the last decade?

In answering this research question, only the 64 empirical SP articles identified in the previous subsection were considered as they are the ones that actually collected any form of data. Figure 5 presents the nine different data collection strategies adopted by these 64 articles.



Key: Su – Survey; I – Interviews; SD – Secondary Data; FG – Focus Group; O – Observation; D – Document Analysis

Figure 5. Data collection strategies used by 64 SP articles

Source: own study.

Figure 5 indicates that six distinct data collection methods were utilized by the 64 empirical SP articles reviewed in this paper: i) Survey, ii) Interview, iii) Secondary Data, iv) Focus Group, v) Observation and vi) Document Analysis. It also indicates that a majority of the 64 articles (44 out of 64) relied on a single data collection method while the rest of

the articles (20 out of 64) relied on a mixed methods approach utilizing some combination of the six distinct data collection methods.

Surveys alone were the most popular data collection method utilized with 26 of the 64 articles reviewed using this strategy (e.g., Kiwia, 2019; Umans et al., 2020; Urban & Nonkwelo, 2020). Interviews alone were the next most common method, with 15 of the 64 articles adopting this strategy (Goldman, 2020; Okoro & Iheanachor, 2020; Arslan, 2021). Nine of the articles combined both surveys and interviews (e.g., Ntshangase et al., 2016; Huynh et al., 2017; Lu et al., 2021) while four articles relied only on secondary data (von Drathen, 2014; McConnell & Qi, 2018; Peter-Hawkins et al., 2018; Tao & Zhao, 2019). Three articles combined interviews, observations and document analysis (Loomis, 2018; Barton, 2019; Matias & Franco, 2020) while another three articles adopted focus groups to collect relevant SP data (Collins, 2015; Chang & Besel, 2020; Perrenoud, 2020). Two of the articles reviewed combined interviews with document analysis (Cole & Harbour, 2015; Tucker, 2020) while one article combined a survey with document analysis (Carter et al., 2019). Vito (2018) had the most robust data collection strategy combining four different methods (interviews, focus groups, observation and document analysis) whilst conducting a multiple case study of SP with the data collection objective being to achieve data triangulation.

As mentioned earlier, Figure 5 shows that 69% (44 out of 64) empirical SP articles relied on only one method of data collection, either qualitative or quantitative. Each broad method of data collection has its strength and weaknesses, and the more robust approach is to combine both qualitative and quantitative data collection methods so that the strengths of both approaches can help to mitigate the weaknesses of the other (Christofi et al., 2021). Future SP scholarship should thus adopt a mixed methods approach so that data triangulation can be achieved, following the example of Vito (2018).

3.5. What themes have extant SP scholarship explored in the last decade?

Five distinct themes were explored by the 174 SP articles reviewed in this study: 1) Assessing the level of SP in different contexts, 2) Challenges to SP implementation, 3) SP and organizational performance, 4) SP and corporate knowledge and 5) SP and management/employee outcomes. Figure 6 provides information regarding the number of articles that focused on each of these five themes.

Figure 6 indicates that more than half (93 out of 174, 53%) of the articles reviewed sought to determine the level of SP being practiced in different organizational contexts. Specifically these articles explored seven different contexts (family businesses [34], education [27], healthcare [22], not-for-profit organizations [4], law firms [4], an accounting firm and a public sector organization).

Theme 1: Assessing the level of SP in different contexts

SP in family businesses was found to be very unique relative to its occurrence in non-family businesses particularly because the potential successor was more often than not a relative who was decades younger than the incumbent (Sharma et al., 2015; Ntshangase et al., 2016; LeCounte, 2020). Family business owners had different motivations for engaging in SP (family harmony and business continuity) (Gilding et al., 2013; Grable et al., 2015; Okoro, Iheanachor, 2020). However, most of these businesses did not have formal or written succession plans (Seaman et al., 2013; Jain, Jain, 2014; Alrubaishi, 2017). Due to this deficiency, a vast majority of family businesses do not even reach the second

generation of continuity; only about 10% get to the third generation (Giuliani, 2016; Vincent, 2017; Umans et al., 2020).

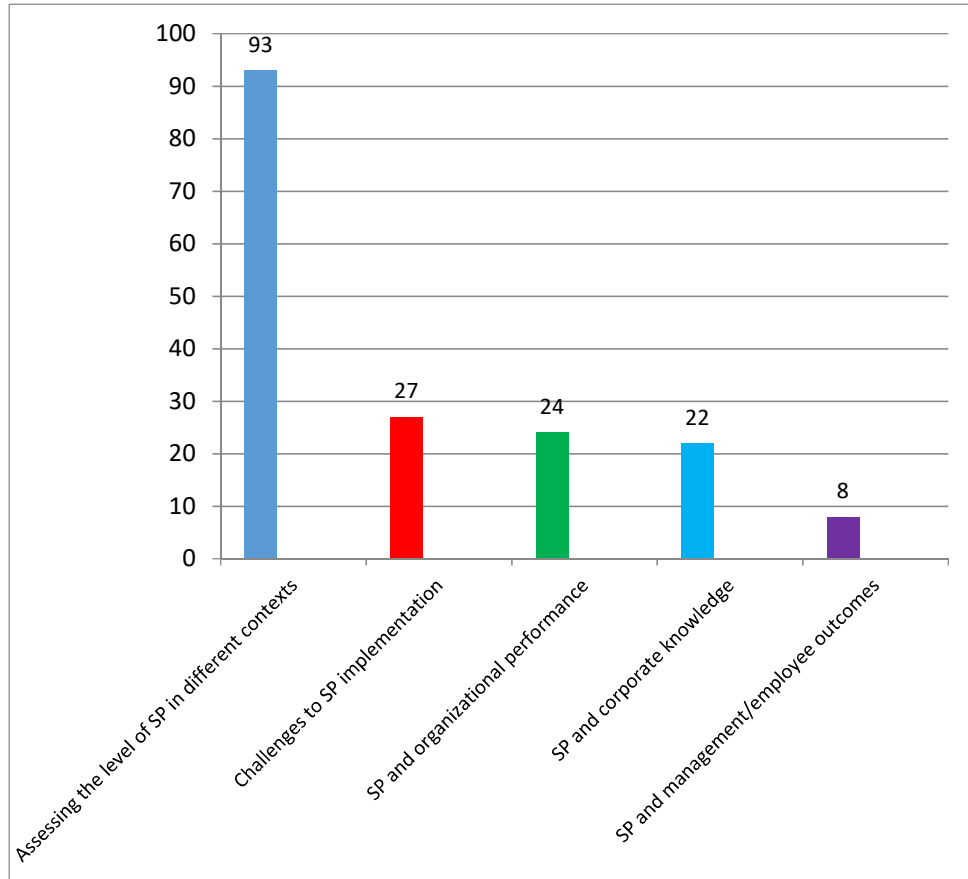


Figure 6. SP themes explored by 174 articles reviewed

Source: own study.

Continuing with the discussion of SP in family businesses, country differences existed in the level of SP in family businesses (Lussier, Sonfield, 2012; Gowthami, 2015). Varying succession laws were found to be an important cause of these differences (Harrison, 2012; Mulder, 2012; Richman, 2012). Cultural practices could also explained country differences in SP practice (Nicholson, Lashley, 2016; Menezes et al., 2019); for example Arab-owned family businesses were found to practice more formal SP practices than their US counterparts (Sonfield et al., 2015). Another example was the fact that some cultures tend to favour males over females as potential successors (Ramadani et al., 2017; Urban, Nonkwelo, 2020). Family dynamics was also identified as a third determinant of the level of SP practiced by family businesses in different countries (Arslan, 2021; Lu et al., 2021).

In order to overcome the challenges of SP in family businesses, several recommendations were made. Ackerman (2013) found that employee stock ownership plans were effective in overcoming taxation issues when implementing a succession plan for family businesses. Seeking the opinion of trusted advisors were also found to play a critical role in the establishment and success of SP in family businesses (Michel, Kammerlander, 2015; Graham, Mischel, 2019; Umans et al., 2019). A third recommendation was the appointment of external planning consultants can help create effective SP for family businesses (Staehr, 2015; Lillico, 2016; Hall, 2017; Moja, 2019; Mihaylov, Zurbruegg, 2020). Ultimately, a bottom-up participatory approach to SP was proposed as the optimum strategy for family businesses (Hibbler-Britt & Wheatley, 2018; Matias, Franco, 2020).

The second most explored context in this theme was the educational sector. Similar to the case of family businesses, it was found that SP was not well established in educational institutions (Klein, Salk, 2013; Huynh et al., 2017; Peter-Hawkins et al., 2018). The shared governance system practiced by these institutions where a board of trustees were tasked with running the institutions were found to be a major obstacle to SP as such boards were often resistant to change (Klein, Salk, 2013; Goldman, 2020). It was recommended that these educational institutions (EI) make SP a priority in order to develop a pool of potential successors in key positions (Russell, Sabina, 2014; Simpson, West, 2014; Knapp et al., 2017; Siewert, Louderack, 2019). In other words, SP must become an important of an EI's organizational culture (Hall-Ellis, 2015; Huynh, 2016; Rayburn et al., 2016; Ritchie, 2020). The yearly performance appraisal system can be co-opted as a SP strategy to identify candidates with leadership potential (McLean et al., 2016). Once these potential leaders are identified, extensive mentoring and training programmes can be utilized to hone and enhance their leadership competencies (Tietjen-Smith et al., 2020; Tucker, 2020; Phillips, 2021).

The importance of SP for long-term sustainability must be doubly emphasized in the educational administration curriculum (Charbonneau, Freeman, 2016; Fusarelli et al., 2018; Green, 2018; Melton, 2018; Phillips, 2020). Ensuring ethnic diversity in the pool of potential successors can also enrich the SP process in EI (Kumaran, 2015). Additionally, technology can be a useful tool to store important knowledge as a part of the SP process (Sobel, Drewry, 2015; Yucedag-Ozcan, Metcalfe, 2018). Contrary to the majority support for SP in EIs, Weare (2015) argued that it is not the right approach for academic libraries as it leads to the risk of perpetuating obsolete ideas of the incumbents. He argues that each vacant role should be filled with the most skilled applicant on a case by case basis (Weare, 2015).

The healthcare sector represented the third most explored organizational context in this first theme. Like the family business and educational sectors, scholars also found that SP was not well established in the healthcare sector (Titzer et al., 2013; Cole, Harbour, 2015; Richins, 2018; Vito, 2018). In fact, a 2016 national survey of local health departments in America revealed that only 39.5% of these departments had a formal succession plan (Darnell, Campbell, 2016). It was strongly recommended that healthcare institutions be proactive in developing formal SP strategies so as to reduce employee turnover in the health sector, particularly when recruiting numbers have been declining over the years (Trepanier, Crenshaw, 2013; Ellinger et al., 2014; Acree-Hamann, 2016; Donner et al., 2017; Phillips et al., 2018; Sierra, Calabrese, 2019).

With the millennial generation set to replace the baby boomer generation as the largest proportion of the workforce, healthcare institutions must ensure that the SP process is

transparent and collaborative; two characteristics that matter a lot to the millennial generation (Kosterlitz, Lewis, 2017; Payne et al., 2018; Chang, Besel, 2020). These Millennials also have a duty to educate their managers on the importance of incorporating SP as crucial part of the long-term sustainability of the health sector (Rafferty, 2015; Reeves, 2018; Ruffin, 2018). An effective SP strategy could be simulation which could equip nurses with the leadership qualities needed to succeed current leaders (Waxman, 2014). Internships can also provide professionals with leadership potential with hands-on experience for the future (Selig, 2020).

Healthcare institutions need to transition from succession planning to succession management; the latter concept envisions SP as an ongoing process rather than a one-time or 'as-needed' organizational process (Turner, 2018; Creta et al., 2020). Similar to Weare (2015) in the educational sector, Anderson (2018) was the sole dissenting voice against SP in the health sector. She argued that SP in this sector tended to favour men over women as the male-dominant leadership tended to identify males like themselves as the best candidates for succession. She concluded that looking for successors outside the organization would provide a more level playing field for women in the health sector.

Four of the 93 articles in this first theme explored the level of SP among not-for-profit organizations (Gothard, Austin, 2013; Bozer et al., 2015; McKee & Froelich, 2016; Varhegyi, Jepsen, 2017). Gothard and Austin (2013) opined that there was no single best approach to SP in non-profit organizations. However, top management's proactive involvement in the SP process is crucial for its success (Bozer et al., 2015). A major obstacle to successful SP in this sector is its inclination to continuity (McKee, Froelich, 2016). Another obstacle is that boards of non-profit organization lack the expertise, time and resources to implement a comprehensive SP strategy (Varhegyi, Jepsen, 2017).

Another four articles focused on the level of SP among law firms (Best, 2016; Griggs, 2016; Gallagher, 2017; Mitchell, 2017). Like other organizational context discussed in earlier paragraphs, SP was also not prevalent in law firms, with a 2015 survey revealing that only 31% of law firms in the US had formal succession plans (Griggs, 2016). This was considered worrisome when one considered that most senior partners in law firms were part of the baby boomer generation who have already retired or are set to do so in a few years time (Griggs, 2016; Gallagher, 2017). An important component of successful SP in law firms was the integration of technology that allowed firms to track the productivity of their senior partners so that the most important partner's succession can be prioritized (Best, 2016). The process of transferring clients from one attorney to another was identified as crucial component of SP in the law firm (Gallagher, 2017). Unfortunately many senior partners in law firms were unwilling to discuss their own mortality and the consequent need for a formal succession plan (Mitchell, 2017).

Wadeson and Ciccotosto (2013) focused on determining the level of SP among accounting firms while Al-Suwaidi et al. (2020) focused on public sector organizations. The former study found that formal SP strategies were considered not feasible by owners of the firms due to changing work expectations of accountants and differences in thinking between the baby boomers and the younger generation of accountants; the latter study discovered that the organizational culture of a public sector organization was one of the most important determinants of the presence of a formal succession plan in such an organization. Relative to the private sector, SP in the public sector is grossly under-researched and thus provides an interesting area for future scholarship to concentrate on.

Theme 2: Challenges to SP implementation

27 of the 174 SP articles (16%) all sought to identify the challenges or obstacles that were hampering organizations from successfully establishing and implementing a formal and comprehensive SP strategy. The first major obstacle was an inability of managers to translate their perception of SP as important into effective SP practice (Galbraith et al., 2012; Garg, Van Weele, 2012; Brooks, 2014; Cook, 2014; Wright, 2015). This inability dubbed by Heitner (2012, p. 53) as “planning paralysis” was caused by managers seeing retirement as too far into the future (Koltin, 2012; Church, 2014; Kjellander, 2018). This paralysis was further exacerbated by the fact that many managers failed to understand that SP is not only for retirement; it is useful for guarding against employee turnover or even sudden death of key personnel (Goodwin, Graebe, 2017; Schaeffer & Akhavan, 2017; Bratcher, 2018; Wilson, 2018). Another cause of the planning paralysis was the fact that managers simply did not consider SP as critically important in the context of operating their businesses successfully on a daily basis (Muhoho, 2014; Bottomley, 2018; Loomis, 2018).

Besides the planning paralysis, conflict between the incumbent and potential successor was identified as a huge impediment to effective SP; the case of Ratan Tata (the incumbent) and Cyrus Mistry (the successor) of Tata Group in India was a case in point (Yadav, Shankar, 2017; Budhiraja, Pathak, 2018). To overcome these impediments, SP must be considered as an important part of a broader talent management strategy meant to ensure that the organization continues to run smoothly regardless of what happens to key personnel (Nyberg et al., 2019; Page, Gerstberger, 2019; Perrenoud, 2020).

Theme 3: SP and organizational performance

24 of the 174 SP articles reviewed (14%) investigated the impact of SP on the performance of organizations. They discovered that SP impacts business survival if the successor is capable, possesses entrepreneurial orientation and has been mentored and trained properly (Gumbo et al., 2012; Zepeda et al., 2012; Capuano, 2013; Farthing, 2013). In addition, SP positively impacts organizational outcomes if the following antecedents are present, visionary leadership and a formal leadership development process (Titzer, Shirley, 2013; Kundanis, 2014; Muslim et al., 2015; Sherrer, Rezania, 2020).

The business case for SP was further strengthened with the finding that businesses with formal succession plans outperformed those without formal succession plans (Tan-Atichat, Aiyeku, 2013; Harrell, 2016; Sharma, Sengupta, 2018; Tao, Zhao, 2019). Similarly, SP had a positive effect on a company’s adaptability and dynamic capability thus providing it with an important competitive advantage over its rivals (Akani, 2015). This translated into positive impact on its financial performance and non-financial performance (Mokhber et al., 2017; Hosseini et al., 2018; McConnell, Qi, 2018; Wendee et al., 2018). Finally, firms successors selected by the founder outperformed firms where the successors were selected by other family members indicating that SP was an important strategic decision that should be carried out by the CEO rather than being delegated (Kiwia et al., 2019).

Theme 4: SP and corporate knowledge

22 of the 174 SP articles reviewed (13%) evaluated the effective of SP in preventing the loss of valuable corporate knowledge among organizations. “Corporate knowledge is the combined tacit, tribal, documented and undocumented knowledge that has been gained within a corporation. This knowledge goes to provide the information and knowledge by which an organization runs” (Carey, 2015). Apparently dealing with current issues has

prevented management from investing in SP as a strategy to stop corporate knowledge loss (Schiuma et al., 2012; Pandey, Sharma, 2014; Opute, 2020). However, the global COVID-19 pandemic has brought CEO mortality into sharp focus which has heightened the importance of protecting corporate knowledge through formal SP strategies (Santora, 2020). In order to ensure the long term sustainability of their organizations, senior employees are willing to share and transfer knowledge with younger employees as long as there is transparency in the SP process (Applebaum et al., 2012; Winship, 2012; Fitsimmons, 2013; Chithambo, 2018; Weisblat, 2018).

An important question to ask is what strategy should firms utilize in effectively ensuring that corporate knowledge is not lost? Ethnography has been identified as an effective SP strategy whereby corporate knowledge is stored by observing, recording and analyzing the actions of older, high performing individuals (Gentry, 2013; Bakare, 2021). The ethnography approach can be strengthened through the use of technology-enabled knowledge repositories (Durst & Aggestam, 2017).

Another strategy that has been proposed is the conducting of a skills-gap assessment of the current workforce so as to identify competencies that need to be enhanced for future leadership positions (Clark, 2015; Hildebrand, 2015; Newhall, 2015; Johnson, 2018; Keller, 2018). This skills-assessment gap should be carried out at least ten years before the incumbent is due to retire as this allows time for a smooth and easy transition of leadership and assets (Koeberle-Schmid, Escher, 2018; Spina, Spina, 2020). A third strategy to secure valuable corporate knowledge is the adoption of an employee rotation system where employees are trained on different aspects of the job thus developing a multi-talented workforce (Sprague, 2019).

Theme 5: SP and management/employee outcomes

Only eight of the 174 SP articles reviewed investigated the influence of SP on various management and employee outcomes. All eight articles found that SP had a significant and positive impact on various management and employee outcomes. For example, SP was found to have a significant positive effect on CEO turnover (von Drathen, 2014; Carter et al., 2019). In the same vein, the more comprehensive the succession plan in an organization, the more satisfied executives were with the leadership transition process (Perrenoud, Sullivan, 2017).

Regarding employee outcomes, a clearly defined SP (clear selection criteria, clear rewards and clear organizational structure) had a positive impact on employee satisfaction (Farashah, 2015). Similarly, SP was found to have a positive correlation with employee job satisfaction and engagement (El Badawy et al., 2016; Ali, Mehreen, 2019). SP also led to an enhanced feeling of job security and positive employee attitudes while reducing employee turnover intentions (Ali, Mehreen, 2019). Finally, SP also had a positive impact on employee performance (Ali et al., 2019).

As mentioned previously, Hibbler-Britt and Wheatly (2018) as well as Matias and Franco (2020) all identified a bottom-up participatory approach as the most effective strategy for holistic SP in organizations. It is thus surprising that only 5% of the SP articles investigated the impact of SP on the most important stakeholders in the entire process, the incumbent managers and their potential successors. This lack of attention given to these stakeholders by extant SP scholarship reviewed in this paper presents an important research gap which future SP researchers should investigate more thoroughly. The need to address this important research gap is further accentuated by the fact that the world is currently in

the Knowledge Worker Age where human capital is considered the most important resource for the long term sustainability of all businesses (Laallam et al., 2020; Zeidan, Itani, 2020; Iliescu, 2021).

4. CONCLUSION

This paper provided an extensive review of the 174 SP articles published in the last decade in order to answer five research questions, each one dealing with the time distribution of these articles, their geographical distribution, the type of articles published, the data collection methods utilized and the major themes explored. The review revealed that interest in SP has ebbed and flowed over the last ten years and that North America has been the most fruitful continent in terms of SP research. The review also revealed that a majority of the SP articles reviewed were conceptual in nature, with survey being the most commonly used data collection method for the relatively few empirical studies conducted in this area. Six themes were explored by the 174 SP articles reviewed with the assessment of the level of SP in different organizations being the most commonly explored theme, while the impact of SP on management and employment outcomes was the least explored theme.

Although this review tried to accommodate as many SP articles as possible by utilizing articles published by 16 reputable publishers, it is still limited by the fact that it does not contain all SP articles published in the last decade. Future reviews can adopt a more robust approach by widening the search horizon for SP articles and also by including the number of years covered by the review in order to provide a more comprehensive picture of the research journey undertaken by SP scholarship over the years.

This review of SP scholarship has revealed that if the 'going concern' principle of organizations is to be achieved, management must make deliberate efforts to formalize the SP process with the clear understanding that it is a continuous, transparent and participatory process, and thus a crucial management imperative.

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MACROECONOMIC BUSINESS ENVIRONMENT AND THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES IN NIGERIA

The study evaluates the effect of the global macro-economic business environment on the development of Small-Scale and Medium-Sized Enterprises (SMEs) in Nigeria. Secondary data on the global macro-economic index of SMEs businesses were selected over 35 years (1985–2019). The data collected were analysed using descriptive statistics and multiple regression analysis techniques. The study revealed the positive coefficient value of 354 836.6525 and 24 141 873.6 for the gross domestic product (GDP) on Purchasing Power Parity (PPP) and Budget variables. A negative coefficient value of –16347085.61 and –232997.0657 was obtained for the inflation rate and the exchange rate, respectively. The coefficient values show the level at which the development of SMEs businesses was affected through the global environmental factors. The study concluded that the global macro-economic business environment directly affects the development of SMEs businesses. The study recommends a policy strategy that will face out the global macro-economic constraints affecting SMEs businesses.

Keywords: business, environment, inflation rate, small and medium enterprises.

1. INTRODUCTION

The small-scale and medium-sized enterprises (SMEs) are the commercial business activities developed to generate revenues and economy of the nations within their business environment. There is no organisation that can survive without upholding a good affiliation with its environment. This applies to business as an entity because for any business to thrive there must be a symbiotic relationship with its environment. However, the environment could be the local or international business environment (Ayedun & Olufowobi, 2016). This environment is a multi-dynamic environment in which business organisations have

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considerable influence on their business. These environments are pertinent to form the business outlooks of an organization and their magnificent constraint on the development of SMEs in Nigeria. The environmental restraint concentrated here is Gross Domestic Product (GDP) or Per Capital income on Purchasing Power and Parity (PPP), inflation rate, budgets, and an exchange rate that affect the operating activities of SMEs businesses in Nigeria (Ajayi, 2016).

The development of SME businesses was precisely related to the sustainability of the global macro-economic business environment. SMEs have been recognized all over the globe as a catalyst for the developing socio-economy of a nation. This was an instrument for attaining macro-economic objectives and sustainable development (Aribaba, Ahmodu & Yusuff, 2018). The development of SMEs has come to stay in the economic growth of a developing country like Nigeria (Obasan, 2014). Small-Scale and Medium-sized Enterprises play significant roles in an emerging and developed economy in the process of socio-economic changes and development. Apart from the swelling per capita income on purchasing power parity, SMEs generate employment opportunities, enhance regional economic stability through manufacturing dispersion and promote effective utilization of the resource in considering economic development (Aribaba, Ahmodu, Oladele, Yusuff & Olaleye, 2019).

In the sub-Saharan African continent, Nigeria is the most populous nation with a leading economic success. Therefore, understanding the relevance of SMEs to the country is important to drive the economic activities of Africa. In Nigeria, SMEs are dealing with intensified global challenges; new emerging technologies in ICT, the production process, and an increasing factor of production which affect the export attractiveness. The study reviewed both conceptual and empirical literature on the global business environment and SMEs development in Nigeria. The gaps identified from the literature show that several studies have been conducted, but none was able to indicate the extent to which the exploratory variables of the business environment were examined on the effect of SMEs development from the global perspective. It is, therefore, evaluating the effect of the global macro-economic business environment on the development of SMEs in Nigeria with the emphasis on the following global parameters which include; the gross domestic product or per capita income (PPP), inflation rate, budget, exchange rate, and SMEs. Also, the pertinent question is; “what effect does the global macro-economic business environment has on the development of SMEs in Nigeria”? Conversely, the links between the global macro-economic business environment and its effect on the development of SMEs are vague in the literature. But in the Nigerian milieu, the development of Small and Medium Enterprises is apparently not effective. Indeed, SMEs businesses play significant roles to boost the nation’s economy by availing them adequate facilities.

2. LITERATURE REVIEW

2.1. Small and Medium Scale Enterprises (SMEs)

Small and medium scale enterprises have long been identified as an instrument of economic growth and development. Although the importance of small and medium scale enterprises has not been questioned, the classification of enterprises into large and medium scale is unfortunately subjective and based on different value judgments. Ayyagari, Beck, and Demircuc-kunt (2003), and Buckley (1989) argues that “the definition of small and medium scale enterprises varies by context, author, and countries”.

In Nigeria, related definitions have been adopted to identify SMEs in the national economy. The Central Bank of Nigeria (CBN), as part of its Small and Medium Enterprise Credit Guarantee Scheme (SMECGS), defines SMEs as an enterprise with assets (excluding land) of between N5million and N500million and between 11 and 300 labour force. The National Council of Industry in 2011 set the limit at 300 employees and the asset base of N200 million **excluding land**. The national policy on small and medium enterprises also defined SMEs according to employment and assets. A micro-enterprise is defined as a business with less than 10 employees and an asset base of less than N5million. A small enterprise has between 10 and 49 employees and its assets are between N5 and N50 million while a medium enterprise has 50 to 199 employees and an asset base of between N50 million and N500 million (Folorunsho, 2015).

More generally and more broadly, Ogechukwu (2006) presented some general criteria for defining small and medium-sized scale enterprises in different countries. These include the number of employees, annual turnover, local operations, sales volume, financial strength, manager and owner autonomy, relatively small markets relative to their industries, and capital usually provided by individuals or shareholders.

2.2. Small and Medium Scale Enterprises Development

Small and medium-scale enterprises are sub-sectors of the industrial sector that play a vital role in industrial development. Ojo (2009) argued that one of the answers to development challenges in developing countries, particularly in Nigeria, is the support of entrepreneurial development system. The performance and effectiveness of small and medium-scale enterprises as instruments of economic growth and development in Nigeria have long been examined. Despite the government institutional policies to build the capacity of small and medium-scale enterprises, small and medium-scale enterprises have not met expectations. This has raised serious concerns and doubts about the ability of SMEs to stimulate economic growth and national development in Nigeria.

Aminu, Adamu, and Ibrahim (2018) observed that numerous studies have shown that small and medium scale enterprises act as a catalyst for a growth and development of a national economy this was supported by Anthony and Arthur (2008), Chinweuba and Sunday (2015), and Vijayakumar (2013). Chinweuba and Sunday (2015) opined those SMEs activities are growth enhancing through expansion in output and other various means of survival. Motilewa, Ogbar and Aka (2015) also established that SMEs are found to be engine of growth in Nigeria. The challenge of solving the problems of hunger, poverty and unemployment is even more worrying if we consider the achievement of the Millennium Development Goals by the country in 2025. If Nigeria wants to achieve the Millennium Development Goals by 2025, one of the sure ways is to improve the capacity of its SMEs.

2.3. Macroeconomic business environment

Macro environment are the general environment within the economy that affects all the business groups at the same time in term of the working, performance, decision making and strategy. It is not static and so it keeps on changing and fluctuating. They are the outside forces that are not under the control of the firm. It consists of individuals, groups, organizations, agencies and others with which the firm deals during the course of its business. They are classified into economic, social, technological, political and legal, and demographic. The ability of a company to design and adjust its internal variables to take advantage of the opportunities offered by the external environment and its ability to control

the threats posed by the same environment determine its success (Parker, 2017). A more punctual perspective represents the environment, as a global uncontrollable force, to which the company must adapt its policies and that is made up of participants and external forces that influence the possibilities of companies to develop and maintain profitable transactions (Kotler, 1998). The macroeconomic business environment deals with the economic aspect of the business environment which include gross domestic product, inflation rate, budget and exchange rate.

2.4. Theoretical Review

2.4.1. Supporting Theories of Global Business Environment

2.4.1.1. The Systems Theory

A system is a set of interrelated and interdependent parts arranged to produce a unified whole. Systems theory sees an organization as a system that must function harmoniously not only in itself but also in a variety of other systems. Therefore, it must also work in harmony with the other systems around it. Mele, Pels, and Polese (2010) explain a system as an entity, which is a coherent whole such that a boundary is perceived around it in order to distinguish internal and external elements and to identify input and output relating to and emerging from the entity. Scholars such as Burns and Stalker (1961), Lawrence and Lorsch, (1967), Aldrich, (1979) have adopted – implicitly or explicitly – a vision of organizations as systems with the aim of analyzing the relationship between organizations and their environment

The application of open system to the organization is advanced by Katz and Kahn (1966), Mele et al. (2010). The organization is seen as a system built by energetic input-output where the energy coming from the output reactivates the system. Social organizations are then open systems due to their material exchanges with the environment. Emery and Trist (1960) address organizations as socio-technical systems, underlining the two main components of the firm seen as a system: a social component (people), and a technical component (technology and machines).

2.4.1.2. Location Specific Advantage Theory

The theory according to Amarasena, (2017) focuses on the location specific advantages of the foreign market which are mainly categorised as availability of resources and lack of political obstructions for investments. Amarasena, (2017) opined that for a firm to start its foreign businesses, it is better for such firm to have more of foreign location advantages than the home country of operation. This was also supported by Franko, (1971), Sharma and Johanson, (1987). Ozga (1960) argued that location theory could explain why MNEs emerge. Supply oriented location theory and demand oriented location theory are the two folds that emerged in location theory. Supply oriented location theory argues that production takes place where the factor costs for production and distribution are the lowest. Whereas, demand oriented location theory argues that the location of a firm is governed by the location of its market and competitors. The emergence of MNEs was as a result of four location factors which are: raw materials, cheap labour, protected and untapped markets, and transportation costs. Dunning (1973) opined that this actually gave good insights into the understanding of geographical distributions of MNEs.

2.4.2. Supporting Theories of Small-Scale Enterprises

Schumpeter (1949) was the first to advocate a dynamic theory of entrepreneurship that views entrepreneurship as the catalyst that disrupts the stationary circular flow of the economy and thus initiates the process of development. An innovator who introduces new products or services into the economy receives the status of entrepreneur. Schumpeter is the first great theorist to place the human factor at the heart of the process of economic development.

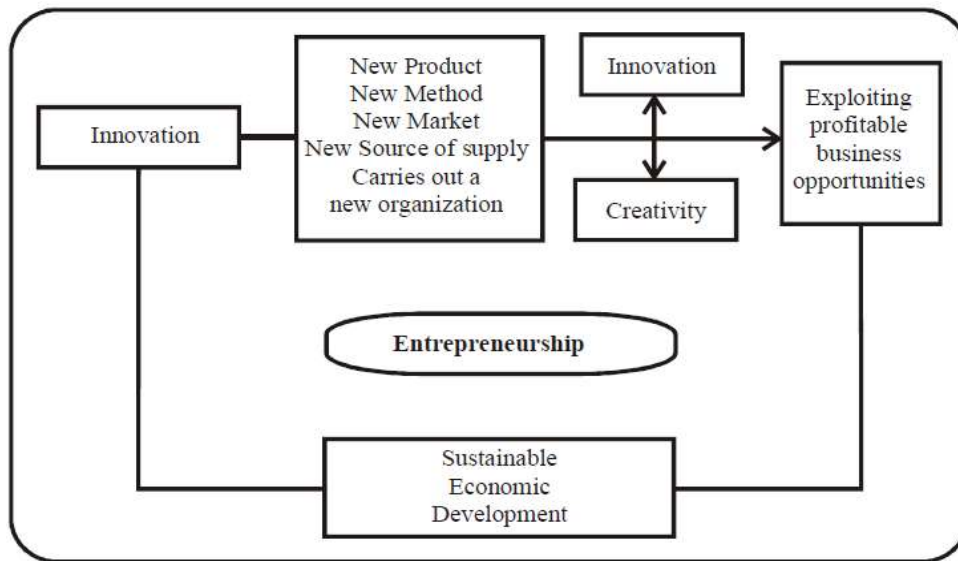


Figure 1. Innovation Theory of Entrepreneurship

Source: (Schumpeter, 1949)

The main figure of this theory, “the innovative entrepreneur”, has played an important role in the rise of modern capitalism. The entrepreneur has been the main driver of the economic development process. On the side of criticism, this theory seems biased because it puts too much emphasis on innovative functions. He ignores the risk-taking and organizational aspects of entrepreneurship. An entrepreneur must not only innovate, but also pool resources and use them optimally. Despite these lacking, the theory supports the “entrepreneurial spirit” of entrepreneur to innovate. It is the act that gives resources a new capacity to create wealth. Innovation, in fact, creates a resource. This gives it an economic value.” Schumpeter's views are particularly relevant in developing countries where innovations need to be encouraged. The transformation of an agrarian economy into an industrial economy has required many initiatives and changes on the part of businessmen and managers.

McClelland (1961) highlighted the characteristics of the entrepreneur to include (i) to do things in a new and better way and (ii) decision-making in uncertainty. McClelland (1961) society proposed a theory based on his research that entrepreneurship ultimately depends on motivation. It is the need for accomplishment (N-Ach), the sense of doing-- and

getting things done, that promote entrepreneurship. According to him, N-Ach is a relatively stable personality characteristic rooted in childhood experiences through family socialization and child learning practices that emphasize standards of excellence, material warmth, self-reliance training and low father dominance.

2.5. Empirical Review

Obasan, (2014) in his empirical study adopted the qualitative method of research and concludes that competition, inflationary trend, technological changes, government policies, accessibility of infrastructural facilities, change in consumer behaviour and income are the problems posed to SMEs managers. SMEs businesses in Nigeria are the victims of the Nigeria environment. This was proven by the President Buhari administration and made the environment hostile for SMEs (Sheu & Mahmood, 2014).

Ayedun and Awoyemi (2014) averred that internal and external environment of businesses could be properly analysed through the use of proper environmental scanning for the enterprise to have a competitive advantage. This is imperative for business environment on the survival of SMEs because without adequate conducive environment, no business will thrive. The government intervention supports could be loan, grants or other social intervention supports facilities to support SMEs businesses and enhance the improvement of socio-economic development of a nation (Adeoye, 2013).

Eruemegbe (2015) posits that among the top ten critical factors that greatly affect the business productivities in Nigeria are not from the external environment. Therefore, internal environment also contributed to the failure of SMEs businesses in Nigeria because the failure of business manager and the workers to work expeditiously in an environment would also reflect on the part of business. These were corroborated in cross-sectional research of a selected economic variable with the confirmation of the highly influenced decision of management of a firm. Specifically, the devaluation of currency and energy resources will discourage a country without adequate infrastructural facilities and face-off some SMEs businesses that are not financially capacitated (Dionco-Adetayo & Adetayo, 2003). Research conducted by Adeoye (2012) was shown that environmental changes are continuously exerting new pressures on companies' performance. In adopting these changes, companies will need to formulate and implement a strategy to reform the business productivities.

Kujala (2015) examined the process of internationalization of an enterprise in the clothing and textile manufacturing sector in Ghana. The study adopted a qualitative approach, using a longitudinal method involving primary and secondary data and an analysis of critical events. The results of the study showed the high level of competition expected of small emerging market operating in the clothing and textile manufacturing industry. Indris and Primiana (2015) conducted a study on the analysis of the internal and external environment of the performance of small and medium industries (SMEs) in Indonesia. The study used a secondary source of data collection through the use of available literature on internal and external performance analyses of small and medium-sized industries (SMEs). The theoretical results of the study showed that the analysis of the internal and external environment had a significant impact on the performance of small and medium-sized industries (SMEs) in Indonesia.

3. METHODOLOGY

The study adopts an ex-post-facto research design for the study. Data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and Nigeria Bureau of Statistics which makes it principally a secondary source of data. The data collected for this study form the basis of the study that covers 35-years between the periods of (1985 - 2019). The study employs a number of analytical tools based on the objectives of the study which includes: descriptive statistics and regression analysis. Engel and Granger Cointegration test was also carried out know if there is long-run movement among the variables in the SMEs.

3.1. Model Specification

Diverse of models have been used to examine the effect of global macro-economic business environment on the development of SMEs in Nigeria but the study adapted Utile, Okwori and Ikpambese (2018) model which was re-modified to determine the effect of macroeconomic business environment on the development of SMEs in Nigeria. In that regard, the study therefore navigates a model to guide its analyses. The model is as follows:

$$SMEs = f(GDP, INF, BUDG, EXCH) \quad (1)$$

This research would specify the above model in econometric form as follows:

$$SMEs = \beta_0 + \beta_1 GDP + \beta_2 INF + \beta_3 BUDG + \beta_4 EXCH + \varepsilon_{it} \quad (2)$$

Where:

SMEs = Small-Scale and Medium-Sized Enterprises

GDP = Gross Domestic Product or Per Capital Income based on Purchasing, Power and Parity

INF = Inflation Rate

BUDG = Budget

EXCH = Exchange Rate

β_0 = intercept

β_{1-4} = coefficient of explanatory variables

ε_{it} = Stochastic error term to represent other explanatory variables not mentioned in research.

The *a priori* expectation of the parameters are:

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0$$

4. RESULTS AND DISCUSSION OF FINDINGS

4.1. Descriptive Statistics of the study variables

The descriptive statistics of the Table 1 displays the mean, minimum, maximum, mid value; and the normality of the variables. The mean values of 1 macroeconomic business environment variables are 3762.33, 19.32, 21.41 and 112.71 respectively. This shows that there is a difference between the macroeconomic business environment variables and the development of SMEs in Nigeria. Thereby, revealing some degree of realistic effect, the macroeconomic business environment has on the development of SMEs. The positive

kurtosis value indicates the level at which the macroeconomic business environment affects the development of SMEs while the negative kurtosis value represents the flatter peak effect of the normal distribution. The mean values of all the explanatory variables are positively skewed except the GDP variable with the value of -0.63 . The skewness describes the positive and negative value of symmetric data as its affect the development of SMEs in Nigeria. The confidence level of (95%) is an indication that the majority of the variables are positively distributed.

Table 1. The Descriptive Statistics Output

	<i>SMEs</i>	<i>GDP</i>	<i>INFR</i>	<i>BUDGET</i>	<i>EXCHR</i>
Mean	2729038086	3762.335	19.317	21.413	112.711
Standard Error	232618069.5	252.617	3.030	4.076	18.502
Median	2226699000	3565	12.09	10.06	118.55
Mode	-	3069	-	10.06	21.89
Standard Deviation	1376187058	1494.502	17.927	24.112	109.461
Sample Variance	1.89389E+18	2233535.546	321.3654328	581.407	11981.778
Kurtosis	-0.618	0.039	1.965	1.401	0.883
Skewness	0.731	-0.629	1.776	1.479303515	1.168
Range	5104152100	5505.76	67.46	89.02	368.01
Minimum	860643300	549.24	5.38	1.1	1
Maximum	5964795400	6055	72.84	90.12	369.01
Sum	95516333015	131681.72	676.1	749.46	3944.87
Count (YEARS)	35	35	35	35	35
Confidence Level (95.0%)	472736794.5	513.379	6.158	8.283	37.601

Source: Author's calculation.

4.2. Regression Analysis

The result of the Engle and Granger co-integration test shows that there is long-run movement among the variables in the SMEs model. This is evidence from the Augmented Dickey-Fuller test statistic that shows a level stationary result at 5% significance level. This result indicates that all variables have long-run co-movement and forecasting ability (Table 2).

Table 2. Co-integration Test

Engel and Granger Co-integration Result				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.1789	0.0001
Test critical values:	1% level		-2.635	
	5% level		-1.951000	
	10% level		-1.610907	
*MacKinnon (1996) one-sided p-values.				

Source: Author (2020).

The result of the implied ECM as shown in the Table 3 indicates that the variables can adjust automatically in the short-run within 13.4 years. This is evidence from the negative and significant coefficient of ECM (-0.3817 , $p < 0.05$). The coefficient of GDP is positive and statistically insignificant at 5% level, indicating that 1% increase in gross domestic product in Nigeria has no significant contribution to the growth of SMEs in the short-run. Also, the coefficients of GBDG, exchange rate and inflation rate are negative and insignificant at 5% level, implying that all these variables have no significant short-run influence on the growth of SMEs in Nigeria. Although, the model is statistically significant at 5% level (evidence from the value of F-statistic) and has no serial correlation problem as shown in the result of Durbin-Watson statistic.

Table 3. Implied Error Correction Mechanism Result

Dependent Variable: DLOG(SMES)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.041553	0.036190	1.148187	0.2606
EG(-1)	-0.381699	0.146979	-2.596962	0.0148
DLOG(GDP)	0.075808	0.097333	0.778856	0.4426
DLOG(GBDG)	-0.027006	0.080697	-0.334661	0.7404
D(EXH)	-0.001519	0.001150	-1.320932	0.1972
D(INF)	-0.003102	0.002629	-1.179843	0.2480
R-squared	0.357659	F-statistic		3.118107
Adjusted R-squared	0.242955	Durbin-Watson stat		1.532657

Source: Author (2020).

Table 4 shows the estimated long-run SMEs model. The result shows that the explanatory power of the model explains almost 70% of the total variations in the growth of SMEs while 30% of the total variations are unexplained. This indicates that the model has high goodness of fit. The model is statistically significant at 5% level as evidence from the value of F-statistic ($20.94 > 9.48$). The model is also free from serial correlation problem since the value of Durbin-Watson statistic is close to 2. The long-run coefficient of GBDG is positive and statistically significant at 5% level implying that 1% increase in GBDG would result to 0.23% increase in SME growth. Thus, GBDG significantly increase the growth of SMEs in the long run. The coefficient of inflation is negative and statistically significant at 5% level. This indicates that in the long run, as price of goods increases by 1%, the growth of SMEs decreases by 0.011%. Hence, increase in price of goods significantly deters the growth of SMEs in Nigeria. The coefficients of gross domestic product and exchange rate are positive and statistically insignificant at 5% level. This indicates that 1% increase in both gross domestic product and rate of dollar to naira exchange in Nigeria has no significant change in the growth of SMEs in the long run. The findings commensurate with the findings of Aribaba et al (2019).

Table 4. Long-run Result

Dependent Variable: LOG(SMES)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.172	0.782	27.073	0.0000
LOG(GDP)	0.003	0.102	0.030	0.976
LOG(GBDG)	0.232	0.084	2.758	0.009
EXH	0.001	0.001	0.636	0.529
INF	-0.011	0.003	-3.756	0.001
R-squared	0.736	F-statistic		20.942
Adjusted R-squared	0.701	Durbin-Watson stat		1.640

Source: Author (2020).

5. CONCLUSIONS

Globalization has made the economy of a nation becomes more exposed to any unfavourable events since the markets are becoming less segmented. The myriad of challenges postured by the country has experienced the vapours of recession as businesses were decelerating; productions were shrinking, unemployment rate upsurges, and capital streams stalled. These affect the SMEs to a large extent in terms of trading and supplying products to other businesses. The study, therefore, recommends that the government should formulate a policy support strategy that will face out the global macro-economic constraints stood on the development of SMEs businesses in Nigeria. They also need to stimulate demand and create an enabling market environment structure through government procurement policies. These will aid in the development of SMEs globally.

The findings of the study lead to the conclusion that most macroeconomic variables do not have a significant effect on the growth of SMEs in the short-run. Consequently, SMEs are more affected by microeconomic factors in the short run. However, statistical evidence indicates that the growth of SMEs is significantly affected in the long run. SMEs are more likely to witness declining growth with an increase in the level of prices over a period of time. This result calls for government intervention on the long-term sustainability of SMEs in developing economies. More importantly, an appropriate framework to regulate inflation will lead to an increasing growth of SMEs in the long run.

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Annex

The Table Showing the Data Used:

YEAR	SMEs	GDP/Per Capital Income (PPP)	Inflation rate %	Budget Billions & Trillions	Exchange Rate (\$)
1985	2521649000	3,222.69	7.44	1.2	1
1986	1823270000	882.52	5.72	2.2	1.75
1987	1607847000	639.01	11.29	3.2	4.02
1988	1733173000	598.26	54.51	4.1	4.54
1989	1323240000	549.24	50.47	4.3	7.36
1990	1606118000	3,361	7.36	4.6	8.04
1991	1611255000	3,288	13.01	5.7	9.91
1992	1424518000	3,355	44.59	6.2	17.30
1993	860643300	3,205	57.17	6.8	22.07
1994	1203093000	3,069	57.03	7.0	22.00
1995	1496441000	2,992	72.84	7.3	21.90
1996	1661213000	3,041	29.27	8.0	21.88
1997	1776028000	3,053	8.53	1.10	21.89
1998	1607914000	3,055	10.00	2.60	21.89
1999	1634716000	2,997	6.62	2.99	92.34
2000	1652325000	3,069	6.93	7.02	101.70
2001	1789778000	3,170	18.87	8.94	111.23
2002	1964082000	3,565	12.88	10.06	120.58
2003	2226699000	3,731	14.03	10.45	129.22
2004	2628652000	3,974	15.00	10.19	132.89
2005	3143849000	4,122	17.86	10.06	131.27
2006	3719532000	4,259	8.24	10.88	128.65
2007	4140298000	4,421	5.38	20.03	125.81
2008	4939627000	4,597	11.58	20.04	118.55
2009	4112168000	4,836	11.54	30.05	148.90
2010	2391031000	5,085	13.72	40.04	150.30
2011	2925834000	5,214	10.84	40.07	153.86
2012	3548488000	5,291	12.22	40.09	157.50
2013	4598098000	5,495	8.48	40.99	157.31
2014	5477949000	5,688	8.06	40.96	158.55
2015	4535702000	5,686	9.01	40.76	192.44
2016	3512263000	5,449	15.68	60.06	348.12
2017	4154302800	5,351	16.52	70.44	369.01
2018	4199741515	5,316	12.09	90.12	365.72
2019	5964795400	6,055	11.32	80.92	365.37

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THE CHALLENGES FACED BY AFRICAN FEMALES IN THE CONSTRUCTION INDUSTRY. EVIDENCE FROM A SELECTED METROPOLIS OF THE EASTERN CAPE

The South African construction industry has successfully held a positive role in the transformation of the country over the years through economic development, infrastructure, and job creation. The purpose of the study was to probe the challenges that hinder the progress of black female professionals to become successful entrepreneurs in the construction industry. The study pursued a quantitative research approach. A questionnaire-based survey was utilized to gather data from participants at the selected location of the Buffalo City Metropole, Eastern Cape. The research findings revealed that although there are still challenges faced by African females, there is still considerable growth of women-owned SMME's and the retention of African female professionals within the construction industry has significantly improved. It was also concluded that the many Government initiatives have also played a key role in these successes, though participants have also noted that there are some areas for improvement on these programs.

Keywords: Construction Industry, Economic Development, Transformation, SMME's.

1. INTRODUCTION

The South African construction industry was prior to 1994 dominated by white male-owned entities, this slightly changed during the introduction of Black Empowerment legislation even though, majority of the beneficiaries of this legislation were African Male entrepreneurs. It was only after the year 2010 that female-owned entities started gradually to enter the industry through the employment of academically qualified women (Makonye, 2019). Although the numbers of females enrolling in construction studies and allied courses have increased significantly in the past decade or there however still not enough ownership and representation of African women in managerial or directorial positions in medium to large scale construction companies due to factors that include but are not limited to i)

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industry being male-dominated; ii) obsolete industry trends or standards, and iii) the limited skills transformation to the few women who are already within the Construction industry.

The construction industry plays an integral role in the economic and social growth of a country like South Africa which is still well in its developing and transformational phase. Women in construction continue to face vast and complex challenges in the Construction Industry. The construction industry requires a face-lift to help improve the business or professional participation of more females as this could eventually lead to more and more female role-players through the advancement of the female workforce in construction. Several female professionals already in the construction industry are channeled more into the office or administrative positions such as Construction Projects Coordinators whose main responsibilities would include but are not limited to, developing construction contracts, and preparing progress reports for clients. Whereas on the other hand much of their male counterparts take up more of the strategic professional, technical, and managerial positions in the industry like Architects, Surveyors, and Site Engineers. This significantly impacts the skills transformation across the two gender groups.

The primary goal of this research was to assess and comprehend the challenges that African Females confront while attempting to establish themselves as specialists in the Construction Industry, as well as to investigate the challenges that African Females face when entering the construction industry. The study has been conducted since little is known about the challenges that African females face while attempting to move into the construction sector.

2. REVIEW OF LITERATURE

2.1. Understanding the Construction Industry

According to Karadağ (2016) the global construction industry accounts for more than 10% of the global Gross Domestic Product (GDP) and employs approximately 7% of the global workforce with an estimated output of \$10.8 Trillion globally in 2017. The South African Construction Industry equally plays a crucial role in the nation's economic growth and assist in curbing unemployment. To ensure sustainability and growth for the industry all business sectors of the construction industry mainly Building, Infrastructure, and Industry Facilities need to engage and show commitment to transformation.

Statistics released on the CIDB's Construction Monitor-Transformation (Jan, 2020), it is evident that although there is a positive trajectory on transformation in small to medium enterprises (in terms of CIDB Grading) there is however still very slow progress when it comes to transformation in the bigger higher graded enterprises (Grade 7–9). From this, the major role-playing contractors in the construction industry are still predominantly white male-dominated and owned. Dennis Pillay, chairperson of Co-operative South African Building Contractors and Civils Association as quoted by Ramphele (2018) further claims that Seventy percent of the total work available in construction gets shared amongst the top five construction companies.

Chun, Hung, and Byun (2015) describe the construction industry as the economic sector mainly responsible for infrastructure design, planning, construction, and maintenance, Skeepers and Mbohwa (2015) further elaborate that the South African construction industry plays a crucial role in the country's plans for development through infrastructure. The two arguments further illustrate the importance of this industry in a country's economic and social development, though, Temidayo, Osunsanmi, Aigbavboa and Oke (2018) believe the

industry is still threatened by activities within and outdated approaches that hinder the integration of women and implementation of Information and Communication Technologies (ICT) in the construction industry.

2.2. Women-Owned Small, Medium and Micro Enterprises (SMME's) in the Construction Industry

Makonye (2019) describes the South African construction industry as one characterized by a large number of small firms that subcontract from larger firms. In a case study by Adendorff, Appels, and Botha (2011) it is further discussed how the growth and development of a strong robust SMME base can lead to the long-term betterment of the country's economy. The Construction Industry Development Board (CIDB) released an online report (A Study of Grade 1 Contractors 2020) in which it is outlined that women are generally under-represented in construction entrepreneurship and further states that most of those women-owned contractors who are formally registered with the CIDB are marked as inactive due to issues which include but not limited to lower educational experiences and obstacles to accessing finance. Haupt and Fester (2012) also observed that the estimated ratio of men to women employees in the construction industry is greater than 2:1. Furthermore, women generally struggle to climb up the hierarchy in the workplace or even when they decide to venture into their businesses within the construction industry due to this lack of strategic skill-sets.

The majority of women-owned SMME's resort to sub-contracting as a growth strategy due to the above-mentioned factors and as per the CIDB's online publication (2020). Subcontracting in the South African construction industry carries a lesser financial risk for the growing SMME and presents development opportunities. Zizile and Tendai (2018) further summarized that amongst other things entrepreneur competencies have a great impact on the survival of SMME's in East London, their study concluded that the performance of women-owned SMME's in East London is significantly dependent on the relationship between risk-taking, envisioning opportunities and innovative skills set.

The South African Women in Construction (SAWiC) was formed in 1997 with the initial focus on training, advocacy, and support to women mainly in housing construction (Ndinda, 2009). SAWiC directly works with Government departments such as Public Works, Human Settlements to actively promote and support women in the construction industry to successfully establish and sustain profitable business enterprises nationally. Ssekibuule (2012) further explains that SAWiC also assists women contractors to gain access not only to housing finance but also supports women contractors secure contracts and networks in the broader construction industry.

2.3. Government Intervention

The South African government has continuously put measures that are aimed at the progression of local economic development while also pushing for contractor involvement in adherence and support for policies and regulations relating to Black Economic Empowerment (BEE), training and skills development (CIDB, 2020).

CIDB (2020) outlines key factors concluded from the Construction Industry Transformation Summit a framework to advance transformation within the construction industry, from that framework highlights the importance of the participation of not only black contractors but also black-women-owned contractors both in the public and private sectors. According to their annual report of 2018 to 2019, the BCMM implemented through

the Expanded Public Works Programme (EPWP) mechanisms within the city to support community development such as the Vukuphile Contractor Programme (BCM Annual Report, 2018/19 FY). The government also works hand in hand with reputable councils in the province such as the South African Women in Construction (SAWIC) to help bridge the gaps identified.

The Expanded Public Works Programme (EPWP) is a flagship initiative of the Department of Public Works launched in April 2004, implemented in all nine provinces which were aimed at alleviating poverty and unemployment through skills development and job creation in the previously disadvantaged communities (Mkhatshwa-Ngwenya, 2016). Dladla and Mutambara (2018) in their study revealed that the majority of participants in the Government's Expanded Public Works Programme were mainly women, and through their study survey found that over 95% of the participants were convinced of the effectiveness of the program in assisting them with their businesses and enhancing their managerial skills. One of the key observations as highlighted by Mkhatshwa-Ngwenya (2016) is the fact that the EPWP was never initially designed or planned as a long-term employment opportunity for the unskilled but rather as an emergency poverty alleviation and skills development program. The Buffalo City Metropolitan Municipality encountered some challenges implementing the EPWP phases and targets, and as discussed by Jikwana (2017) these included but were not limited to lack of political and administrative support and poor improper planning.

The Vukuphile Contractor Programme (VCP) is another programme created to accelerate the skills development of emerging contractors with regards to administrative, technical, managerial, and entrepreneurial aspects of business for these emerging contractors to be equally competent in bidding and execution of big labour-intensive projects.

The VCP incorporated a learnership program the Vukuphile Learnership Programme (VLP) which assisted qualifying emerging contractors with the required theoretical and practical skills over three years leading to a National Qualification Framework (NQF) recognized qualification (Maholwana, 2015). This would then boost the emerging contractor's chances of upgrading from a Grade 1 and Grade 2 on the CIDB's to a higher grading.

3. METHODOLOGY

An exploratory research approach using the quantitative research method was adopted for this study. The quantitative research method was selected based on the purpose of the study, the quantitative research method allowed for the incorporation of a wide range of methods concerned with the systematic investigation of socio-economic challenges with the use of statistics and numerical data. According to Hughes, Cresswell, and Cresswell (1996), quantitative research further allows for ease of analyses and interpretation of results, Ghauri, Grønhaug, and Strange (2020), further ascertains this notion by adding that quantitative research can be represented in a form of charts and graphs.

The research used a sample size of 20 participants, spread over five different companies actively involved in the Construction Industry of the Eastern Cape particularly was deemed as a necessary minimum to effectively provide enough information to produce concrete findings. Due to the country's current state of disaster, 20 participants were deemed

sufficient and were within means of reach without having to exhaust travel arrangements which would, in turn, incur unnecessary costs.

Table 1. Number of participants broken down into five companies

Name of Company	Sample Size
Imvelo Quantity Surveyors cc	4 Respondents
Platinum Trading (PTY) LTD	4 Respondents
SA Homes Group	4 Respondents
The South African National Road Agency Ltd (SANRAL)	4 Respondents
Tshiki Consulting Engineers	4 Respondents
Total Number	20 Respondents

Source: own study.

The primary instrument used in the study was self-administered questionnaires, which were distributed amongst 20 willing participants. The questionnaire consisted of 14 questions inclusive of open-ended and close-ended questions.

Data was collected through Self-administered questionnaires which were sent out to all participants who had agreed to take part, these were sent out and received back by scan mail. All returned questionnaires were carefully checked for any errors or incompleteness, the answers were then recorded to be presented in statistics format through bar graphs and pie charts.

4. RESULTS

The survey approach was used to acquire primary data. To gather the essential information, a questionnaire was created and pre-tested. Self-administered questionnaires were used to obtain the data. A closed-ended questionnaire with several different options for respondents was used to collect primary data. Descriptive statistics were employed in a study to describe the basic characteristics of the data. They provide concise summaries of the sample and measures. They are the foundation of almost every quantitative data analysis, along with simple graphical analysis.

Figure 1 depicts the racial demographics of the respondents, over 55% categorized themselves as African, another 30% were White with a further 15% of the respondents marked as Indian. This implies that there is a fair share number of African professionals in the construction sector of the Eastern Cape. Sangweni (2015) emphasizes the importance of capturing the race of respondents due to the different cultural backgrounds which may also influence participants' responses.

Figure 2 illustrates that of the 20 participants, 65% have extensive experience of between 5–10 years with a further 10% having more than 10 years of experience, the rest are respondents with less than 5 years of experience sitting at 25%. This implies that the construction industry has improved significantly through the years in terms of retaining their staff, with professionals going well over the 5-year mark of experience.

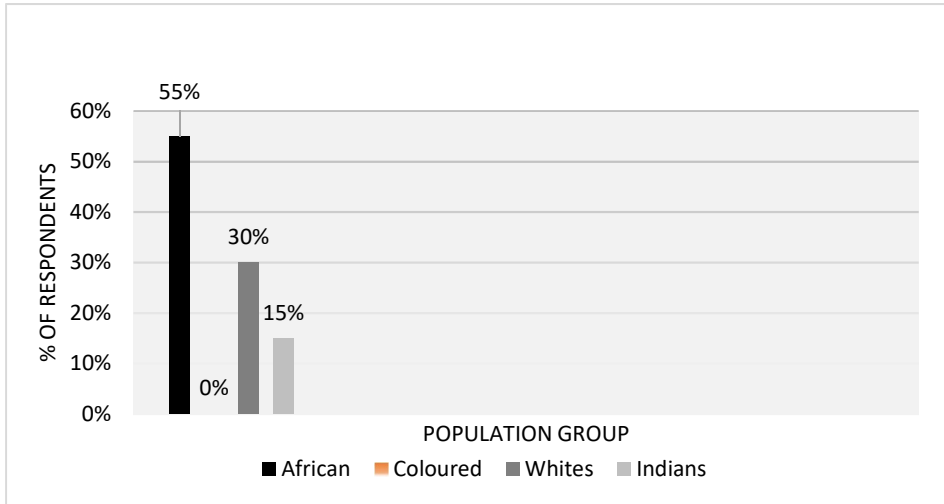


Figure 1. Ethnicity of Respondents

Source: own study.

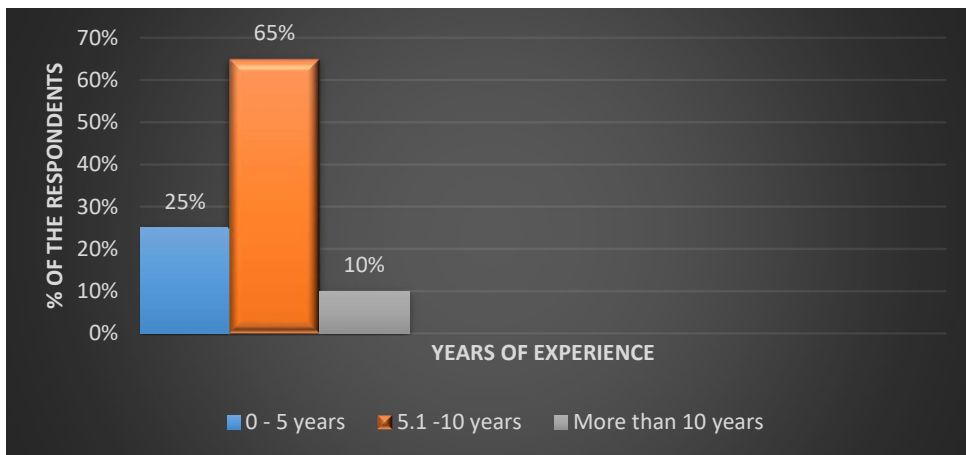


Figure 2. Respondent's work experience in the construction Industry

Source: own study.

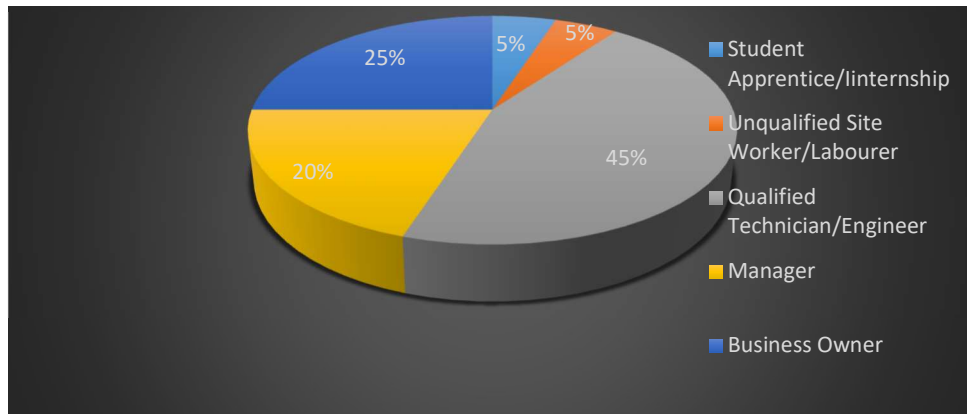


Figure 3. Respondent's position in the construction industry

Source: own study.

Many of the participants are qualified Engineers/Technicians at 45%, followed by the 25% who are business owners, 20% are in managerial positions while there is a further 5% each on those on Internships and those who are unskilled labourers. The above shows that construction is no longer considered an end career with no opportunities for promotions, the above shows.

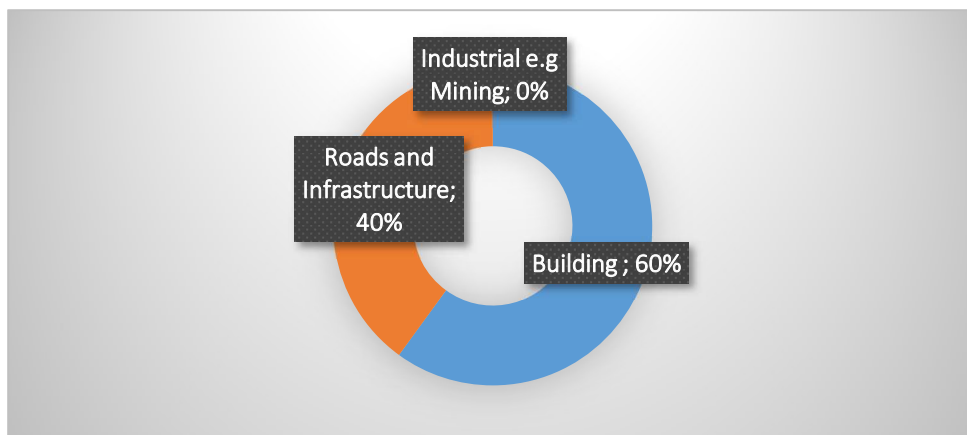


Figure 4. Respondent's area of expertise

Source: own study.

Due to the fewer mining activity in the province of the Eastern Cape, the majority (60%) of the participants are in the building sector followed by 40% in the roads and infrastructure sector. This also reveals future opportunities for industry growth in the Eastern Cape beyond only Building and Infrastructure sectors.

Table 2. Challenges faced by women in the construction industry

Challenges experienced	Number of responses (n)	Percentage (%)
High dominance and stronghold of male counterparts	14	70%
Women possessing inappropriate and inadequate skills set for the construction industry	12	60%
Unequal educational opportunities presented to women	13	65%
High industry standards	09	45%
Challenges of securing start-up capital	18	90%
Challenge of high industry costs	16	80%

Source: own study.

Results further reveal that women generally encounter a plethora of challenges when trying to venture into the construction industry. Some of these challenges are the inability to secure start-up capital, the high cost of the industry, and unequal educational opportunities. Aneke, Derera, and Bomani (2017) in their study suggest that other challenges facing women entrepreneurs in construction are socio-cultural issues. The authors further explain that the women entrepreneurs to curb these issues often find solutions through forming and belonging to network organizations that provide business support and training and at times forming partnerships with Non-Government Organisations (NGO's) or with the more established women in business.

Participants were asked specifically about the initiatives the local municipality has implemented to uplift female contractors in the industry, very few showed awareness of these programs, proving that the municipality still has work to do to ensure not only awareness but active participation from the developing SMME's in the municipality.

5. RECOMMENDATIONS

There should be integration and development of young female professionals to strategic and managerial roles within the construction industry. Corporate organizations need to play a huge role in ensuring that the female professionals are well-groomed and supported to pursue managerial roles within the industry.

The continuation of these government initiatives is very crucial to have an efficacy that is well documented, however proper planning and support from all stakeholders is also equally important to ensure the success of these initiatives. Like the EPWP to be properly planned and budgeted for these to reach the targeted groups and provide a more sustainable long-term solution to the unemployment challenges it was set to curb.

There should be female emerging contractor development programs. Emerging contractors need to identify the type of support that they required through these development programs, enlisting assistance in securing access to finance as key, followed by assistance in securing work and contracts that are to be enhanced in both public and private sectors.

6. LIMITATIONS

Major limitations experienced were mainly due to the current pandemic, with the Government imposing restrictions on travel and gatherings, this meant there was limited opportunity to conduct more one on one interviews or to visit some of the participants at their places of work as some of the participants were on a work from home schedule.

7. CONCLUSION

The objectives of the study were to highlight the major challenges faced by women both as professionals and business owners in the construction industry, the study further outlined the survival techniques women in construction have had to develop to have longer sustainable careers in the industry. The study further investigated the role that SMME's and emerging contractors play in the industry, and further highlights the importance to ensure the continuous development of these SMME's through avenues like the CIDB's contractor grading platform.

The study concludes and recommends the need for further research to be conducted into the development of female African contractors in the construction industry of the Eastern Cape. A study of the roles that both local and national government has to play needs to be conducted and reviewed.

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IMPACT OF INNOVATIONS ON THE SAVING OF THE PRODUCTION COMPANY'S WORKING TIME FUND

The article deals with innovation management in the conditions of a manufacturing company whose aim is to reduce the working time fund that directly determines productivity or efficiency of the company in competitive market conditions. Based on explicit quantification of time frames based on an analytical – chronometric method applicable to production operations in the process. The results of observation, time measurement, research and evaluation of time consumption during the implementation of a repeated production operation, or its complex part within defined production site are presented. Based on explicitly performed quantitative analysis, introducing of innovative technology, innovative solutions in the field of production technology management that support sustainable development with an emphasis on the development of environmental quality are presented including an explicit quantification of working time fund savings through the implementation of innovative machinery and equipment in critical production operations of the analysed production process.

Keywords: innovation, saving time, critical points of the production process.

1. INTRODUCTION

Innovation is a way of life of the company that intervenes in all partial components of the reproduction process (marketing, product and technology development, planning, production, sales, staff training, management, etc.) (Kováč et al., 2011). If the company identifies with the innovation strategy, then it is characterized by a high share of innovative products in the sales structure, the use of advanced technology with innovative management

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(Dicová, 2008, Carter et al., 2001). For customers in the market (Estélyiová, 2007). The aim of innovation in the company is to increase sales to customers and to ensure quality as well as productivity towards the inside of the company, or efficiency. Subsequently, these facts are reflected in the philosophy of the company and its brand (Damanpour, Gopalakrishnan, 2001). In terms of costs, technology innovation is more demanding than product innovation, but in terms of market dominance, it is necessary to combine these innovations. Innovation in companies has its specifics presented in the form of risk, which is associated with the vision of success, the danger of failure and loss (Henriques, Sadorsky, 2007). Customer-oriented innovations need a source of ideas for new products and services, which are based primarily on their own analysis of the relevant market segment and customer behaviour in it (Ivanová, Tomanová, 2014). Therefore, companies in the region are concentrated in clusters, where they use their specific environment and available professional capacities.

By analysing the company's position in the market, it is possible to understand its overall situation in comparison with similar business entities (Vivero, 2002). The results then help to identify reserves related to innovations in the company and point to the positive development of the company's activities in reducing energy intensity. An important step in the process of increasing innovation is to focus on extensive data collection on production processes, as well as to analyse the individual production operations that take place on them (Budziakowski, 2016).

2. AIM, SCOPE AND SUBJECT MATTER

The aim of the case study was an exact analysis of the time consumption of partial production operations of the production process in the real conditions of the production company. Based on a detailed analysis of the time consumption of partial production operations, critical points of the production process of the final product were identified. In terms of identifying critical areas of the working time fund, production innovations of mechanical and technical equipment were proposed, the implementation of which would save the working time of the production process with an emphasis on maintaining the competitiveness of the production company, increasing productivity and environmental responsibility in accordance with the principles of sustainable development.

3. RESEARCH METHODOLOGY

For a detailed analysis of partial production operations in the production process and the normative of time consumption, the measurement was performed directly at the workplace using the method of analysis – chronometry. The time frame of the operation (chronometry) was used to determine the production time for individual production operations. The time frame of the operation is a part of working frames and captures the results of observation, measurement, examination and evaluation of time consumption when performing a certain repetitive production operation, or part of it at the workplace of an individual. Time consumption was measured using a stopwatch. During the analysis of a specific production process, its partial production operations were identified, which is illustrated in detail in Figure 1.

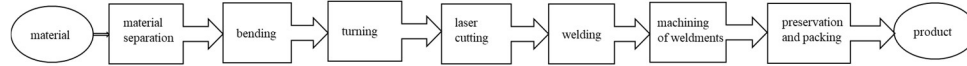


Figure 1. Production process in the analysed company

Source: Authors' own elaboration.

For the needs of compiling partial operations, the consumption of working hours of individual production operations was quantified by the analysis – chronometric method, based on which innovations of the production process were designed in the form of mechanical – technical equipment operating on the basis of systemic understanding of environmentally responsible company.

4. RESULTS AND DISCUSSION

For the analysed production process consisting of partial production operations (Figure 1), time frames with exactly identified time consumptions of individual work operations were constructed as follows:

- Time frame of the material separation, which uses a high-performance automatic band saw BOMAR transverse 610.440 GA with a cutting range up to 610 x 440 mm (Table 1).

Table 1. Material cutting by automatic saw

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	6	7.23	7.49	7.33	10.38	9.14	9.39	8.44	8.91	8.63
2	10.25	9.36	8.56	9.68	8.05	8.85	9.01	9.89	8.78	8.97
3	15	14.69	15.67	15.77	15.76	18.45	17.54	18.23	15.89	15.92
4	6.12	6.05	5.61	5.56	6.15	6.54	5.24	6.67	5.57	5.56
5	1.74	1.83	1.83	1.74	1.95	2.01	1.35	1.29	2.13	2.58
Σ	39.11	39.16	39.2	40.08	42.3	45	42.5	44.5	41.3	41.7
Total measurement time	414.78	=	Average measurement time 41.478 minute per piece							
Number of measurements	10									
Maximum measurement time:	44.99 min.		Minimum measurement time: 39.11 min.							
U _A standard uncertainty:	0.26	Precision:	8.47%	-5.71%						
Time consumption = 0.69 hour per piece										

Notes: 1 – Loading drawing documentation, 2 – Material selection, 3 – Sawing, 4 – Control of separated material, 5 – Material storage.

Source: Authors own elaboration.

- Ermak Speed bend material bending time frame, which provides bending with the required accuracy and speed, while repeatable accuracy is possible thanks to the synchronization of the hydraulic cylinders with the servo-valves, and automatic axis indexing at machine start-up calibration (Table 2).

Table 2. Material bending with Ermak Speed bend

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	3.34	3.47	3.56	3.39	3.45	3.3	3.37	3.44	3.43	3.39
2	10.61	10.34	10.65	10.3	10.41	9.85	10.18	10.22	10.18	10.24
3	10.66	10.35	10.53	10.2	10.39	9.76	10.12	10.28	10.19	10.22
4	1.01	1.86	1.87	1.76	1.85	1.72	1.83	1.83	1.75	1.84
5	2.23	1.72	1.64	2.02	1.98	1.97	2.31	1.96	2.22	1.97
6	1.45	1.1	1.13	1.17	1.15	1.08	1.18	1.05	1.22	1.12
7	0.62	0.71	0.58	0.62	0.68	0.76	0.66	0.77	0.69	0.65
8	15.04	15.12	15.15	14.84	14.96	14.43	14.63	14.92	14.62	14.4
9	0.48	0.64	0.48	0.82	0.43	1.18	0.6	0.63	0.59	0.6
10	0.21	0.21	0.24	0.36	0.26	0.26	0.33	0.34	0.27	0.22
4	1.88	1.86	1.87	1.76	1.85	1.72	1.83	1.86	1.75	1.84
6	1.14	1.1	1.13	1.17	1.15	1.04	1.18	1.05	1.12	1.09
7	0.65	0.69	0.48	0.61	0.64	0.74	0.72	0.68	0.71	0.69
8	14.84	14.82	15.05	14.64	15.12	14.48	14.83	14.92	15.12	14.51
9	0.52	0.48	0.62	0.82	0.75	1.09	0.94	0.83	1.08	0.97
10	0.19	0.24	0.23	0.37	0.39	0.34	0.38	0.31	0.34	0.29
11	14.88	16.39	18.02	14.62	14.13	15.16	18.19	17.83	19.57	14.36
12	0.12	0.11	0.12	0.13	0.11	0.15	0.13	0.12	0.13	0.14
Σ	79.87	81.21	83.35	79.6	79.7	79.03	83.41	83.04	84.98	78.54
Total measurement time	812.73	=	Average measurement time 81,273 minute per piece							
Number of measurements	10									
Maximum measurement time:	84.98 min.	Minimum measurement time: 78,54 min.								
U _A standard uncertainty:	0.08	Precision:	4.56%	-3.36%						
Time consumption = 1.35 hour per piece										

Notes: 1 – Loading drawing documentation, 2 – Creating a bending program, 3 – Tool selection against material, 4 – Material inspection – dimensionality, 5 – Attaching the tool to the press brake, 6 – Starting the program, 7 – Inserting material, 8 – Ram lower => zoom – bend, 9 – Gauge bending check, 10 – Gauge bending check, 11 – Bending repair – product finalization, 12 – Product storage.

Source: Authors own elaboration.

- Turning time frame using a TOS SV 18 RA type lathe, which is a manual, universal centre lathe and represents a highly precise and powerful machine, well usable especially in small series and piece production (Table 3).
- Laser cutting time frame, which uses two types of cutting gases, oxygen and nitrogen. During oxygen laser cutting, the material is burned and an oxidized layer unsuitable for surface treatment is formed on its edges. During nitrogen cutting, the material melts, which is then blown out of the dividing track (Table 4).
- Welding time frame, which is the process of making a permanent joint by forming interatomic bonds between the welded parts during heating or plastic deformation or by the action of both (Table 5).

Table 3. Turning

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	2.85	2.34	2.49	2.68	2.94	2.62	2.7	2.44	2.58	3.02
2	8.52	10.01	8.09	9.42	8.98	9.24	8.85	8.78	8.75	8.97
3	2.27	2.42	2.43	2.43	2.48	2.46	2.42	2.38	2.46	2.58
4	4.64	4.59	4.58	4.58	4.48	4.38	4.61	4.82	4.59	4.48
5	17.44	16.95	15.71	14.93	15.56	16.84	16.82	17.19	17.64	16.59
6	1.44	1.94	3.09	2.57	1.84	2.05	2.93	3.12	2.72	2.35
7	3.35	2.98	3.51	3.43	3.45	3.27	3.15	3.42	3.15	3.28
8	6.57	6.7	6.84	6.69	6.74	6.54	6.51	6.82	6.72	6.75
9	1.94	2.33	1.76	2.47	2.34	2.18	1.98	1.78	1.99	1.97
10	3.35	3.45	3.35	3.42	3.23	3.54	3.48	3.18	3.24	3.35
9	1.94	2.33	1.76	2.47	2.3	2.1	1.87	1.71	1.9	1.95
11	3.35	3.17	3.35	3.34	3.23	3.13	3.13	3.17	3.13	3.08
12	0.49	0.36	0.42	0.3	0.37	0.34	0.37	0.34	0.32	0.42
13	0.44	0.47	0.47	0.51	0.46	0.46	0.47	0.45	0.47	0.46
14	1.37	1.48	1.39	1.41	1.45	1.39	1.34	1.41	1.39	1.45
15	0.43	0.48	0.45	0.49	0.43	0.45	0.48	0.42	0.44	0.42
Σ	60.39	62	59.69	61.08	60.29	60.99	61.11	61.42	61.42	61.13
Total measurement time	609.57	=	Average measurement time 60.957 minute per piece							
Number of measurements	10									
Maximum measurement time:	62.00 min.									
U _A standard uncertainty:	0.07	Precision:	1.71%	-2.09%						
Time consumption = 1.02 hour per piece										

Notes: 1 – Loading drawing documentation, 2 – Semi-finished product inspection, 3 – Material clamping, 4 – Cutting tool selection, 5 – Tool clamping 6 – Zoom tool, 7 – Turning, 8 – Product rotation, 9 – Zoom tool, 10 – Turning, 11 – Drilling, 12 – Termination of activities on the facility, 13 – Product removal, 14 – Product measurement and control, 15 – Product storage.

Source: Authors own elaboration.

Table 4. Laser cutting

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	12.5	12.87	14.22	14.94	16.61	14.63	15.03	13.51	14.26	13.81
2	46.81	55.06	46.01	52.51	50.74	51.59	49.25	48.61	48.62	49.93
3	13.41	12.31	13.87	12.32	14.01	13.74	12.48	13.18	13.6	14.36
4	26.65	25.68	26.58	25.49	25.84	24.86	25.98	26.67	25.61	24.89
5	10.91	9.83	9.86	9.28	10.49	10.8	11.92	10.3	10.74	10.97
6	16.88	15.87	17.64	14.33	13.22	15.45	16.31	17.28	15.04	14.08
7	61.54	61.34	60.04	60.48	60.49	61.26	60.53	62.04	61.59	60.89
5	18.14	17.42	19.12	18.62	18.25	17.46	17.41	17.52	17.29	17.13
6	1.18	1.82	1.05	1.77	1.22	1.17	1.02	1.86	1.25	1.59
7	76.48	77.58	76.84	76.98	78.02	78.06	77.68	78.04	77.95	78.88

Table 4 (cont.). Laser cutting

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
5	13.34	12.81	12.02	13.74	12.99	11.71	10.41	11.44	11.49	12.84
6	1.14	1.99	2.39	1.65	2.1	1.91	2.05	1.88	1.78	2.36
7	26.76	28.48	29.13	25.16	24.98	28.77	29.44	27.33	29.02	27.58
8	7.57	6.58	6.92	7.24	7.98	6.84	7.05	6.92	6.97	7.34
Σ	333.31	339.63	335.7	334.5	336.94	338.3	336.6	336.6	335.2	336.7
Total measurement time	3363.32	=	Average measurement time 336.332 minute per piece							
Number of measurements	10									
Maximum measurement time:	339.32 min.		Minimum measurement time: 333.31 min.							
U _A standard uncertainty:	0.26	Precision:	0.98%	-0.90%						
Time consumption = 5.61 hour per piece										

Notes: 1 – Creation of technological process, 2 – Programming, 3 – Material typing, 4 – Creation of technological process, 5 – Material selection, 6 – Material focus, 7 – Laser cutting, 8 – Product storage and surplus.

Source: Authors own elaboration.

Table 5. Welding

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	5.48	5.87	6.22	4.94	5.61	4.92	5.23	6.51	4.26	5.81
2	9.14	9.06	9.01	9.54	9.74	9.59	10.25	8.61	8.62	9.93
3	18.28	19.32	20.87	18.32	16.01	18.74	18.47	19.18	16.6	18.36
4	137.12	140.68	135.56	125.49	142.81	134.86	135.98	136.57	145.71	144.79
5	13.71	13.84	13.86	14.28	16.49	13.78	12.94	12.29	13.71	12.83
6	164.55	158.87	172.64	169.35	173.28	165.42	169.93	170.88	165.04	164.98
7	9.14	9.35	9.12	10.48	10.46	9.26	9.53	10.12	9.64	9.72
8	20.57	20.46	20.34	20.64	19.98	20.49	18.97	20.13	20.06	19.67
Σ	378	377.45	387.62	373.04	394.38	377.06	381.3	384.29	383.64	386.09
Total measurement time	3822.86	=	Average measurement time 382.286 minute per piece							
Number of measurements	10									
Maximum measurement time:	394.38 min.		Minimum measurement time: 373.04 min.							
U _A standard uncertainty:	0.30	Precision:	3.16%	-2.24%						
Time consumption = 6.37 hour per piece										

Notes: 1 – Loading drawing documentation, 2 – Inspection and preparation of components, 3 – Clamping parts, 4 – Scoring, 5 – Control, 6 – Welding, 7 – Dimension check, 8 – Inter-operational inspection and Material storage.

Source: Authors own elaboration.

- A precision machining time frame that is a collection of technological processes that change the appearance and functionality of a metal part to modify its properties, extend functionality, or modify design. This production operation was carried out using WHN 13 CNC, which is a universal CNC machine for precision horizontal milling, coordinate drilling and boring, thread cutting for box, plate and complex work pieces weighing up to 12,000 kg (Table 6).
- Time frame of preservation and packaging, which achieves the protection of all metal parts during transport and storage at the customer (Table 7).

Table 6. Precise machining

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	30.12	32.81	30.98	29.76	30.45	31.83	30.64	30.99	31.97	30.76
2	50.23	52.48	51.54	51.83	49.82	50.94	51.22	48.98	50.34	50.98
3	10.73	10.02	9.24	11.64	16.54	14.4	10.81	11.88	12.67	10.84
4	60.37	63.72	59.28	58.76	61.82	63.83	60.74	64.72	62.21	59.88
5	10.71	10.29	12.41	11.92	12.63	9.81	9.43	9.68	10.91	11.49
6	6.16	6.62	7.75	8.83	8.86	7.64	7.94	8.34	8.46	9.12
7	16.76	16.28	17.95	17.63	18.14	18.46	16.12	17.65	17.48	18.46
8	8.13	9.63	8.06	8.9	9.34	8.92	9.63	9.77	8.54	9.34
9	5.98	5.74	7.87	9.53	8.56	8.82	8.36	7.84	8.42	9.41
10	4.9	5.32	4.83	6.41	6.41	7.63	8.12	5.18	6.03	7.12
6	5.16	5.62	7.35	5.36	6.23	5.26	7.9	6.34	5.66	6.81
7	55.76	56.28	59.68	57.41	52.28	54.76	56.81	57.65	57.48	54.76
8	15.13	16.64	16.94	15.89	15.01	15.24	16.46	15.88	16.16	15.41
9	10.94	10.74	9.87	10.93	9.98	12.23	9.92	12.34	10.73	10.16
10	6.95	7.32	8.81	5.98	6.15	7.58	5.67	7.34	6.83	6.12
6	5.23	5.62	7.35	5.63	8.45	7.84	5.01	3.95	6.63	6.14
7	30.63	31.28	30.86	42.02	39.2	43.94	30.42	33.81	32.88	37.67
8	12.73	14.64	13.94	12.21	14.12	11.34	12.83	11.74	16.97	13.21
9	7.89	8.74	7.83	8.23	7.78	8.54	7.81	7.48	8.64	8.21
10	11.97	12.32	14.83	13.41	18.95	12.63	13.64	11.95	12.36	11.46
6	5.67	6.62	7.35	11.36	9.24	6.26	8.74	6.81	7.75	7.48
7	31.03	66.28	29.88	32.31	34.28	36.34	31.92	32.65	33.78	32.54
8	12.34	12.63	11.94	11.85	12.4	11.34	11.83	12.36	11.84	13.42
9	7.94	8.74	7.73	9.53	8.76	9.12	7.63	8.14	8.18	8.035
10	10.95	9.36	11.83	8.4	9.92	12.41	11.94	12.14	11.98	9.87
6	5.64	5.62	7.35	6.36	5.34	5.56	5.83	7.36	7.78	6.81
7	31.02	36.21	39.86	32.41	30.12	29.92	32.53	31.14	29.58	29.74
8	11.73	13.64	16.45	14.72	33.72	12.67	11.93	12.34	11.94	12.63
9	7.98	8.48	7.87	8.16	7.99	7.57	7.59	8.71	8.63	7.94
10	12.59	11.36	12.83	13.16	14.62	13.35	11.34	18.58	18.35	17.61
11	9.77	9.78	9.35	8.76	11.28	10.86	17.34	11.94	11.85	12.47
12	2.51	2.56	2.62	2.17	3.63	2.94	3.85	3.56	3.73	3.64

Table 6 (cont.). Precise machining

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
13	7.72	8.12	7.82	7.98	8.74	7.87	9.58	8.09	7.86	8.24
14	12.56	13.31	12.45	13.95	14.32	12.83	13.4	11.26	12.02	12.97
15	3.46	2.61	2.54	2.7	3.97	3.35	3.63	2.43	2.53	2.43
Σ	539.39	597.43	575.24	576.1	608.56	584.03	568.56	571.02	571.02	573.175
Total measurement time	5772.675	=	Average measurement time 577.2675 minute per piece							
Number of measurements	10									
Maximum measurement time:	84.98 min.	Minimum measurement time: 539.39 min.								
U_A standard uncertainty:	0.57	Precision:	5.42%	-6.56%						
Time consumption = 9.62 hour per piece										

Notes: 1 – Loading drawing documentation, 2 – Creating a drilling program, 3 – Tool selection against material, 4 – Weldment clamping, 5 – Measuring probe measurement, 6 – Inserting a machining tool, 7 – Execution of the program, 8 – Product release, 9 – Product position change, 10 – Measuring probe measurement, 11 – Control measurement, 12 – Product cleaning, 13 – Product release, 14 – Product transfer, 15 – Product storage.

Source: Authors own elaboration.

Table 7. Preservation and packaging

Operation	Measurements [min]									
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
1	15.02	14.86	14.97	15.45	14.76	15.48	14.77	15.12	15.03	15.24
2	6.15	6.24	6.16	6.58	7.12	6.82	6.79	6.44	7.15	7.42
5	10.12	10.45	9.94	10.23	10.41	10.15	9.93	9.75	10.2	9.84
Σ	31.29	31.55	31.07	32.26	32.29	32.45	31.49	31.31	32.38	32.5
Total measurement time	318.59	=	Average measurement time 31.859 minute per piece							
Number of measurements	10									
Maximum measurement time:	32.50 min.	Minimum measurement time: 31.07 min.								
U_A standard uncertainty:	0.02	Precision:	2.01%	-2.48%						
Time consumption = 0.53 hour per piece										

Notes: 1 – Product cleaning, 2 – Preservative application, 3 – Packing.

Source: Authors own elaboration.

Based on a detailed analysis of time frames of partial operations in terms of the analysis – chronometry method. identified critical points were identified and are included in Table 8:

- bending: a critical point in bending repair, i.e. product finalization,
- turning: critical points in partial production operations including turning the product and approaching the tool.
- precise machining: critical points in partial production operations including uncoupling the product. changing the position of the product and measuring with a measuring probe.

Table 8. Identification of critical points in the production process

Manufacturing operation	Bending										
Recalculation of critical points	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	In sum
11[%]	18.63	20.18	21.62	18.37	17.73	19.18	21.81	21.47	23.03	18.28	20.07 %
Manufacturing operation	Turning										
Recalculation of critical points	M2	M3	M4	M5	M6	M7	M8	M9	M10		In sum
8[%]	10.81	11.46	10.9	11.18	10.72	10.65	11.10	10.93	11.04		14.37
9[%]	3.7	2.95	4.04	3.88	3.57	3.24	2.90	3.24	3.22		%
Manufacturing operation	Precise machining										
Recalculation of critical points	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	In sum
8[%]	11.13	11.24	11.7	11.03	13.9	10.19	11.02	10.87	11.3	11.17	27.84 %
9[%]	7.55	7.1	7.16	8.05	7.08	7.92	7.27	7.79	7.7	7.63	
10[%]	8.78	7.65	9.24	8.22	9.13	9.18	8.92	9.67	9.59	9.1	

Source: Authors own elaboration.

In view of the above, based on the identified critical points of the working time fund according to a clear quantification of partial production operations in terms of analytical – chronometric method of measuring time frames it can be concluded that individual machinery should be implemented in the above production operations:

- LVD EasyForm9 220/30 press brake in the identified critical bending operation,
- CNC lathe Spinner TC600-65 MC in the identified critical turning operation,
- Milling head WHN 13 CNC with milling head HUI 50 in the identified critical operation precision machining.

Subsequently, the quantification of time savings that can be achieved in clearly identified production operations and their critical points where the following savings of the working time fund can be achieved was performed:

- by implementing and using the LVD EasyForm9 220/30 press brake. it is possible to achieve savings of 31.14% of working time (Table 9),

- implementation and use of CNC lathe Spinner TC600-65 MC can achieve savings of 24.27% (Table 10). while the quantification in question does not consider the compatibility of technical parameters in the production process, i.e. increasing time savings in product implementation,
- by implementing and using the WHN 13 CNC milling head with the HUI 50 MC milling head, it is possible to achieve a saving of 28.76% (Table 11), while the quantification in question does not take into account the compatibility of technical parameters in the production process. i.e. increase time savings in product implementation.

Table 9. Quantification of bending working time savings

Save time when deploying LVD EasyForm9 220/30								
Average time per operation								
Operation	1	2	3	4	5	6	7	8
before	3.41	10.3	10.27	1.73	2	1.17	0.67	14.81
after	3.41	10.3	3.49	1.73	2	1.17	0.4	14.09
Operation	9	10	4	6	7	8	9	10
before	0.65	0.27	1.82	1.12	0.66	14.83	0.81	0.31
after	0.22	0.27	1.82	1.12	0.4	14.83	0.28	0.31
Operation	11	12					SUM	Time saving 31.14%
before	16.32	0.13					81.273	
after	0	0.13					55.968	

Source: Authors own elaboration.

Table 10. Quantification of bending working time savings

Save time when using the Spinner TC 600-65 MC								
Average time per operation								
Operation	1	2	3	4	5	6	7	8
before	2.67	8.96	2.43	4.57	16.57	2.41	3.3	6.69
after	2.67	8.96	2.43	4.36	15.79	1.39	2.31	0
Operation	9	10	11	12	13	14	SUM	Time saving 24.27 %
before	2.07	3.36	2.03	3.21	0.37	0.47	60.957	
after	0	2.35	0	3.21	0.37	0.47	46.164	

Source: Authors own elaboration.

Table 11. Quantification of precision machining time savings

Time saving when using WHN 13 CNC with HUI 50 milling head								
Average time per operation								
Operation	1	2	3	4	5	6	7	8
before	31.03	50.836	11.88	61.53	10.93	7.972	17.493	9.026
after	31.03	50.836	11.88	61.53	10.93	7.972	16.968	0
Operation	9	10	6	7	8	9	10	6
before	8.053	6.146	6.169	56.29	15.88	6.875	6.185	0.31
after	0	0	6.169	54.6	0	0	6.185	0.31
Operation	7	8	9	10	6	7	8	9
before	35.27	13.373	8.115	13.35	7.728	36.1	12.195	8.3805
after	34.21	0	0	0	7.728	35.02	0	0
Operation	10	6	7	8	9	10	11	12
before	10.88	6.365	32.25	15.18	8.092	14.38	11.34	3.121
after	0	6.365	31.29	0	0	0	11.34	3.121
Operation	13	14	15				SUM	Time saving 28.76 %
before	8.202	12.907	2.965				577.27	
after	8.202	12.907	2.965				411.24	

Source: Authors own elaboration.

From the above comparative quantifications of the proposed innovative measures, which were identified based on explicit quantifications of critical points of partial operations it can be stated that the use of the proposed innovative measures will determine the working time savings of 15.22% (Table 12).

Table 12. Quantification of the benefits of introducing innovative elements into the production process

	The production process today	Proposed production process
Beginning		
Laser cutting	336.332	336.332
Sawing	41.478	41.478
Bending	= 2 x 81.273 = 162.546	= 2 x 55.968 = 111.936
Turning	= 3 x 60.957 = 182.871	= 3 x 46.164 = 138.492
Welding	382.286	382.286
Precise machining	577.268	411.242
Conservation	31.859	31.859
End		
SUM in minutes	1 714.64	1 453.63
	Saved time:	15.22%

Source: Authors own elaboration.

5. SUMMARY AND CONCLUSION

Innovation of products, machine – technical equipment, or the whole technological process clearly contribute not only to maintaining the competitiveness of the company but also to its environmental responsibility in the exploitation of terrestrial and other natural resources in favour of the use of renewable resources and to reduce the emission of pollutants including CO and CO₂ which also contribute to the implementation of the so-called low carbon technologies. Purchase of new machinery and equipment that can work in various production regimes not only increases the quality but also the energy demand. The merger must consider activities at individual workplaces into one continuous operation on machinery which will reduce the need for manipulation or operational adjustment of the machine and at the same time reaches min. 10% savings energy in the flow of production. An important aspect is working in multiple axes or at different angles.

Such mechanical - technical equipment can during smooth operation control and self – exchange reduce the time required for the final product by more than 15% over time production process. If processes increasing production efficiency while increasing labour fund savings time of human activity of the company will be based on innovation in production then the company will gain significant market position, reduce the negative impact on environmental quality and increase energy efficiency.

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		A size 6 space should be left after each table.
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$$A_2^1 = \sum_{i=1}^n \frac{b_i \cdot \cos^2 \alpha}{2 \cdot a \cdot c} \quad (1)$$

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- The description of an electronic document needs to include the date of access, source of the document, type of carrier, version, e.g.:

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Wood, E.H. (2009). *Event marketing: Experience or outcome?*. “*Journal of Promotion Management*”, Vol. 15, Iss. 1–2. DOI: 10.1080/10496490902892580.

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