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INCREASING BUSINESS PERFORMANCE IN THE DIGITAL ERA

Edited by
Janusz Nesterak, Bernard Ziębicki

Institute of Economics
Polish Academy of Sciences

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Introduction

Increasing business performance in the digital era is paramount for staying competitive and thriving in today's fast-paced, technology-driven environment. The shift towards digitalization has brought about both challenges and opportunities for businesses across various industries. One of the most striking aspects of this transformation is the immense potential for efficiency gains. Through the integration of advanced technologies like artificial intelligence, big data analytics, and automation, businesses can streamline operations, optimize resource allocation, and enhance decision-making processes. This not only leads to cost savings but also frees up valuable time and resources for innovation and strategic initiatives. Furthermore, the digital era offers unprecedented access to a global market. With the right digital marketing strategies, businesses can reach a wider audience, connect with potential customers, and build brand loyalty on a scale that was previously unimaginable. Social media platforms, search engines, and e-commerce marketplaces provide powerful tools to engage with customers, gather feedback, and adapt products or services to meet evolving demands. Personalization and customization are also key drivers of success in the digital era. With data analytics and AI-driven insights, businesses can understand their customers' preferences and behavior patterns, allowing for tailored experiences and offerings. This not only leads to higher customer satisfaction but also fosters long-term relationships, which are invaluable in a competitive marketplace. However, it is crucial to acknowledge the challenges that come with this digital shift. Cybersecurity concerns and the need to protect sensitive data have become paramount. Businesses must invest in robust cybersecurity measures and stay vigilant against evolving threats. Additionally, the rapid pace of technological change means that businesses must be agile and adaptable. Continuous learning, experimentation, and a willingness to embrace new technologies are essential for staying ahead of the curve. Increasing business performance in the digital era requires a strategic and holistic approach. It involves harnessing the power of technology to drive efficiency, expanding market reach through

digital channels, and prioritizing personalized customer experiences. Simultaneously, it demands a vigilant stance on cybersecurity and a commitment to ongoing learning and adaptation. Businesses that navigate this landscape effectively are poised to not only survive but thrive in the digital era.

This monograph is dedicated to addressing this issue, and it is the result of scientific cooperation between the College of Management and Quality Sciences of the Krakow University of Economics and other scientific and business institutions, such as University of Messina (Italy), Rafael Landivar University (Guatemala), Andrzej Frycz Modrzewski Krakow University, Ho Chi Minh City University of Technology (Vietnam), Grand Valley State University (USA), Fulda University of Applied Sciences (Germany), Lviv State University Ivan Franko (Ukraine), Jan Kochanowski University of Kielce.

The monograph deals with the issues from both a theoretical and practical perspective. The topics are divided into the following two complementary parts:

- Management and organization in the digital economy.
- Relationship management in modern organizations.
- Performance management orientation tools.

The first part of the study was devoted to management and organization in the digital economy. It addressed issues such as branded politics and neuroscience. The study also presented innovative tourism startups and discussed challenges in their application. Furthermore, it examined the outlook for a green cosmetic industry in Vietnam using Porter's Diamond Model. The study also delved into the correlation between transactional relationships and technological integration, the impact of COVID-19 on the level of trust, and the increased online activity of market players. Additionally, it provided a review of research on the application of the Industrial Internet of Things in Industry 4.0. This part also characterized the advancement of the concept of smart cities, including principles and an original approach to geospatial analysis.

The second part of the study addresses relationship management in modern organizations. This section focuses on the qualitative analysis of corporate bankers' perception of their clients' communication, trust in a client, and relationship commitment. It also includes exploratory research on the role of business analysts in business organizations, as well as the effects of gamification on behavioral change in knowledge transfer. Additionally, it covers topics such as relationship marketing in Polish e-commerce, the significance of emotional intelligence in an organizational context, support systems or research proposals from both an institutional and cultural approach, and a literature review on the study of migrant entrepreneurship.

The third part of the study focused on performance management orientation tools. This section covers the measurement of financial goals in an M&A project, using a cross-border merger as an example. It also delves into entrepreneurial resilience in the face of crisis conditions, provides an overview of controlling implementation methodologies in enterprises, and offers a literature review on financial measures of intellectual capital. Additionally, it examines cost deployment in the optimization of production processes within an enterprise and discusses the pricing policy of non-public higher education institutions in Poland.

The studies present research results and proposed solutions for business practice. These issues are examined from the perspective of various categories of organizations, including both business and public entities, as well as in the context of social development.

As scientific editors of this monograph, we wish to express our gratitude to all Authors for accepting the invitation to co-create it and share the results of their research with the readers. We would also like to thank the Reviewers: professors Liliana Hawrysz and Anna Surowiec for their valuable contribution to the shape of the contents of this publication.

Janusz Nesterak, Bernard Ziębicki

PART I MANAGEMENT AND ORGANIZATION IN THE DIGITAL ECONOMY

Chapter 1

Branded Politics and Neuroscience

Bartolomeo Rafael Bialas, Janusz Nesterak

1. Introduction

There is a consensus among management, sociology, anthropology, semiotics, political science, and social psychology scholars on the role brands play in contemporary consumer-voter culture. Brands are viewed as important strategic assets that significantly contribute to the development of a competitive advantage. Although most management scholars agree on the critical role brands perform for today's organizations – both for-profit and nonprofit – there is still much confusion as to what exactly constitutes a brand. What is a brand? What is strategic brand management? Even though only 40 years have passed since the publication of important – and seminal – academic texts on the strategic importance of the brand, branding has quickly attained prominent disciplinary status (Allen et al., 2008). As Chris T. Allen, Susan Fournier, and Felicia Miller claim, "As recognition of the strategic value of branding has increased, the scope of application of branding insights has expanded in kind. Branding has extended beyond consumer goods and services to include business-to-business domain, countries, and people. Inside the firm, Chief Branding Officers have emerged, granting marketing a coveted boardroom voice. With intangible assets now accounting, on average, for 75% of the value that investors place in firms, we have entered what may be called the Golden Age of Brands" (Allen et al., 2008).

The purpose of this article is to showcase the evolving role brands – and strategic brand management – play in electoral politics in the U.S. The concepts of brand and branding have evolved significantly with the development of the art and science of neurotechnology. Strategic brand management is increasingly applied to the fast-paced American electoral politics, just as commercial brands are increasingly taking a stance on political issues. Additionally, the purpose of this paper is to examine the application of neuroscience

research tools to electoral politics and ponder the implications of neuropolitics in the voters' world, both in the near and distant future.

2. The Importance of Branding and Brand Orientation in Modern Electoral Politics

There is no doubt that branding, as a management phenomenon, "has come to characterize various facets of our life, and politics is no exception. It has reshaped the political equations and has made its presence felt during elections" (Kumar & Dhamija, 2017). According to numerous brand scholars, "brands often provide the primary points of differentiation between competitive offerings, and as such they can be critical to the success of companies. Hence, it is important that the management of brands is approached strategically" (Wood, 2000). According to Susan Fournier, who enjoys undisputed authority in the field of strategic brand management and consumer psychology, "a brand is first and foremost a repository of meanings for consumers to use in living their own lives…" (Allen et al., 2008). A brand, as Arvind Sahay posits, in its broadest sense "encapsulates the sum total of the entire customer experience: everything from the logo, the website, the product or service use experience to the social media experiences, the way the firm answers the phone, the after-sales service, the word-of-mouth impressions and the way customers experience its employees – all of this as it exists in the mind of the customer. In short, the brand is the way customer perceives the product and/or the firm. It is the lived experience of the customer. It is critical to be aware of the customers' brand experience and have a plan to create the brand experience that the firm wants to present. After all, a good brand doesn't just happen. It is a carefully considered strategic plan, well implemented over time" (Sahay, 2022).

A well-articulated fact emerges from these various aforementioned brand definitions: brands are important because consumers forge emotional relationships with them. This emotional relationship between customers and brands is called 'brand equity' in the brand management literature. Brand equity has profound implications for strategic brand management. Although several scholars proposed numerous definitions of brand equity, an elegant classification of the different meanings of brand equity can be offered:

1. Brand equity refers to the total value of a brand as an intangible asset that adds value beyond the product or service. This value is derived from the degree of brand recognition a company/brand owner has, as well as how positively or negatively customers view the brand ("What is brand equity", n.d.).

2. Brand equity is "a measure of the strength of consumers' attachment to a brand" (Wood, 2000).

3. Brand equity refers to "a description of the associations and beliefs the consumer has about the brand" (Wood, 2000).

The first category is traditionally studied under the rubric of brand valuation – or brand value – and is mostly used by financial valuators and accountants. The second category is an important one due to the fact that the consumers' level of attachment to a brand – often called brand strength – determines the overall brand loyalty. The third category refers to the nature of the mental associations – positive, neutral, and negative – that constitute the brand image or the so-called brand description. As Lisa Wood asserts, "Brand value may be thought to be distinct as it refers to an actual, or notional business transaction, while the other two focus on the consumer. There is an assumed relationship between the interpretations of brand equity. This relationship implies the casual chain […] brand description – brand strength – brand value" (Wood, 2000).

3. Branding Politics

As was already mentioned, branding has entered the political marketplace and fundamentally reshaped the ways political actors communicate with their constituents. In today's fast-paced and highly branded world, voters can be conceptualized as consumers. Looking from this perspective – and following the argument proposed by Amit Kumar and Somesh Dhamija – it can be argued that "Any product which has got the ability to satisfy the wants and demands of the consumer could be labeled as a brand as long as it fulfills on the brand promise. It is not as if only a physical product qualifies as a brand. A service, a person, a place, and organization, an idea, a cause, an event, anything and everything can be branded as long as consumers identify with them" (Kumar & Somesh, 2017). As such, political actors – both political parties and politicians – can use the principles of strategic brand management to effectively seek to differentiate themselves from their competitors and – in the process – forge emotional relationships with their constituents. According to Christopher Pich and Dianne Dean – two scholars considered to be the preeminent experts on political branding – "The notion of a political brand and the rhetoric of branding have been widely adopted by many political parties as they seek to differentiate themselves, and this has led to an emerging interest in the idea of the political brand" (Pich & Dean, 2015).

A growing number of scholars – in both management and political sciences – are subscribing to the idea that various market entities, ideas, countries, ideologies, religions, and individuals can be branded using the principles of strategic brand management. Gareth Smith and Alan French – two political science

scholars who are outspoken proponents of the use of the rules of strategic brand management in the political environment – claim that "Branding is increasingly used in non-traditional, social markets such as politics. For example, branding has been considered in such 'unlikely' organizations as the London Metropolitan Police, the Roman Catholic Church, and universities. In fact, 'branding principles have been applied in virtually every setting where consumer choice of some kind is involved, e.g., with physical goods, services, retail stores, *people, organizations*, places or *ideas*'. It is axiomatic that political parties are organizations where politicians (*people*) seek to exchange *ideas* and promises for electoral support. Unsurprisingly, therefore, there has been a steady stream of papers that have accepted political parties and politicians as brands. […] We …argue that political parties are brands because they act as brands to consumers. A brand is defined as 'A name, term, sign, symbol, or design, or a combination of them which is intended to identify the goods or services of one seller or a group of sellers and to differentiate them from those of competitors' (AMA, 1960). Political parties clearly satisfy this definition. The electorate have a high level of recall of their names (e.g., Republican, Democrat, New Labour, Conservative) and (to a lesser extent) their symbols (the elephant, donkey, red rose and tree respectively). Critically though, voters attach meaning to these party names and symbols over time and this allows them to differentiate and vote for one party over another at an election" (Smith & French, 2009).

Elaborating on the concept of political branding, Marcus Phipps, Jan Brace-Govan, and Colin Jevons assert that "The branding concept has expanded considerably from the fast-moving consumer goods industries in which it was first used. Branding is relevant to a broad range of entities in consumer culture including banks, colleges, pop stars, entertaining identities, countries, and even an organization's employees. If a marketer can convince consumers that "all the product offerings in a category are not the same and that meaningful difference exist" then products in that category can be branded. […] The brand image of individual politicians is influenced by the corporate brand of the political party and the political climate, but as people they still have an element of control over their personal brand image through how they service their electorate. […] However, it has been shown that brands are ever-changing social entities that can take on a life of their own, and a significant amount of their brand identity and equity is customer-based. At one extreme, consumers can reject a brand's communicated image and independently create their own as shown, for example, in the anti-Nike, anti-sweatshop culture that has developed in response to the Nike corporate brand. It is suggested that through manipulation, consumers can mold

a brand so that it fits their own personal identity, or create their own brand meaning, as distinct from the owner's brand meaning" (Phipps et al., 2010).

It can be argued then that political brands play an important role in the political marketplace. Traditionally, brands are confused with images. There is, however, a fundamental difference between a brand and an image. According to Alex Marland, "The word brand is now commonly used in political discourse and popular vernacular. In political science, it tends to be used as a surrogate for party labels, packaging, personalities and valance issues in a manner that does not suggest academic familiarity with the brand construct. A brand is a fuller concept than image. An image is the evoked impression for an entity formed from the recall of all communication impressions; a brand is an evoked image that resonates on an emotional level, and which stimulates customer loyalty" (Marland, 2013).

There is no doubt that the political product is a complex, intangible, and multidimensional entity. However, it can be posited – following the arguments of numerous management scholars – that the political product "embodies a certain level of promise about the future, where the satisfactions derived are not immediate but long-term, vague and uncertain" (Phipps et al., 2010). A strong brand offers a well-articulated and well-understood promise to consumers. A brand promise is firmly grounded in the brand's values, convictions, beliefs, and its intended future. A brand promise sells an emotional connection. A brand promise is an intangible value, which is probably why it is so difficult to develop.

Brands have transcended their initial market responsibilities and functions – e.g., identification function – to become complex neuro-psycho-socio-cultural phenomena. Brands have become cultural symbols representing the values, concepts, lifestyles, and moral norms of certain cultural groups. According to A. Briciu and V-A. Briciu, "Recently, anthropologists, historians and sociologists have looked at brands from a cultural perspective, by accepting their importance in society and by offering complementary points of view regarding the management of psychological visions of brands. Given the existing cultural diversity, brands are regarded as symbols – full of meaning and emotions, being prized in society. The most powerful symbolic brands, bearing the name of "iconic brands, are some of the most famous in the world: Coke, Nike, Apple, Starbucks and the like". The perspective of cultural branding implies the existence of the consumer in a space of globalization, imperialism and cultural standardization, "embedded in the symbolic universes of branding", and the owner of the brand or the marketing specialist deliberately endows the brand with cultural content. Through this, the brand will play an important part in the consumer culture. The brand is seen "as a storied product putting shared myths related to cultural

identity projects up for consumption". Such brands work "to organize collective identities, as expressions of the major social axes such as class, gender, and race within a particular national discourse and beyond". Individuals, considered *homo mercans*, "use iconic brand symbolism to firm up their identities and to enact the basic status and affiliation processes that are the bread-and-butter functions of all symbols"" (Briciu & Briciu, 2020). Brands are fundamentally different entities from tangible products by virtue of their symbolic value. Jean Baudrillard – a French sociologist, philosopher, cultural theorist, and political commentator – suggested that the importance of the *sign value* of objects over their *use value* has become emblematic of the postmodern consumer culture; the symbolic dimension (what it *means*), untethered from its material referent (what it *does*) has come to represent the essential, desired component that drives commercial exchange (Serazio, 2015).

Brands – according to numerous neuroscientists – should also be studied from the perspective of cognitive neuroscience. Successful brands are deeply embedded in peoples' subconscious. Brands create an intricate web of mental associations and memories in peoples' brains. When these associations are robust and positive, they can fundamentally reshape peoples' behaviors, attitudes, and convictions (Johnson, 2021). Leading neuroscience scholar Antonio Damasio notes, "More may have been learned about the brain and the mind in the 1990s – the so-called decade of the brain – than during the entire previous history of psychology and neuroscience" (Zaltman, 2003). It seems only fitting to state that brand management scholars are slowly transcending their comfort zones to explore unfamiliar disciplines – such as neuroscience, anthropology, semiotics, visual communications, political and social psychology – to enrich the understanding of the long-term impact of brands on consumer behavior.

4. The Emergence of Neuropolitics

There is no doubt that continued discoveries about the biological underpinnings of human behavior are currently helping brand strategists and management consultants find new ways to develop strong – and profitable – brands that positively resonate with consumers. As Marcus Holmes observes: "Over the last few decades, the neurosciences have seen a dramatic rise in use across various disciplines of social science, influencing social psychology, economics, and organizational behavior. In economics, "neuroeconomics" has become something of a cottage industry, with journals devoted to the topic and graduate programs specializing in it" (Holmes, 2014).

Robert H. Blank, whose work lies at the intersection of political science and neuroscience, claims that "The brain has long been the subject of considerable conjecture, myth, and misconception. Throughout history, it has remained a mysterious and enigmatic entity: hidden within the skull it has been a dark territory, little understood. Major technological developments in imaging the brain, combined with leaps in knowledge about its functioning in the last several decades, have, however, appreciably expanded our understanding of its role. The evolving neuroscience perspective promises to help explain much about the biological basis of human behavior, consciousness, memory, language, and other attributes that make us what we are. Combined with research in molecular biology and other life sciences, neuroscience provides the key to understanding the foundations of human capacity, as well as mental and behavioral dysfunction" (Blank, 2013).

Since the 18th century, when Adam Smith introduced his concept of in the invisible hand – a metaphor for the hidden economic forces of self-interest that have a profound impact upon the idea of free markets – economists have believed that people are rational when making economic decisions. According to this view – and subsequently, the updated neoclassical model – people, also called economic actors, are assumed to be self-interested and rational. This theory argues that people generally are capable of making logical and rational decisions that – by and large – produce the most optimal outcomes for themselves. This theory has been prevalent for decades, and has had a profound impact upon managers, economists, politicians, and policymakers. The field of neuroscience technology is advancing rapidly. In fact, neuroscience has undoubtedly become one of the most dynamic fields in biomedical research focused entirely on researching the function, structure, and biochemistry of the nervous system and the human brain. Neuroscience is currently being translated from the research lab studies to applications in real-world settings, including electoral politics and business competition. As a result, neuroscience can easily be credited with shattering the hegemony of the rational choice theory.

According to the Harvard Business Review's seminal article *The End of Rational Economics* penned by Dan Ariely, "We are now paying a terrible price for our unblinking faith in the power of the invisible hand. We're painfully blinking awake to the falsity of standard economic theory – that human beings are capable of always making rational decisions and that markets and institutions, in the aggregate, are healthily self-regulating. If assumptions about the way things are supposed to work have failed us in the hyperrational world of Wall Street, what damage have they done in other institutions and organizations that are also made up of fallible, less-than-logical people? And where do corporate

managers, schooled in rational assumptions but who run messy, often unpredictable businesses, go from here? We are finally beginning to understand that irrationality is the real invisible hand that drives human decision making. It's been a painful lesson, but the silver lining may be that companies now see how important it is to safeguard against bad assumptions. Armed with the knowledge that human beings are motivated by cognitive biases of which they are largely unaware (a true invisible hand if there ever was one), businesses can start to better defend against foolishness and waste" (Ariely, 2009). Rober H. Blank – following Friend and Thayer – postulates that due to advances in neuroscience "Rational choice will wane, political psychology will wax as the center of the discipline. The glorification of economics and economic approaches will fade too. It is ironic that psychology was once dismissed as the 'softest' of the social sciences, while economics was triumphed as the most scientific. Yet the advance of the life sciences, evolutionary psychology, cognitive psychology, and neuroscience altered this ordering" (Blank, 2013).

According to Drew Westen – the world's preeminent expert on neuroscience and political psychology who provided an eloquent and comprehensive description of the neural correlates of political judgment and decision-making in his seminal book "The Political Brain: The Role Of Emotion In Deciding the Fate of the Nation" – the brain areas responsible for reasoning are not active when partisan voters are exposed to their favorite political candidates. Instead, the brain areas regulating emotions are highly active and involved in information processing. Westen asserts that "the notion of *partisan reasoning* is an oxymoron, and that most of the time, partisans feel their way to beliefs rather than use their thinking caps" (Packard, 2008). Westen is abundantly clear when he posits that "when reason and emotion collide, emotion invariably wins – and that it isn't only partisans who think with their guts in politics" (Packard, 2008).

A plethora of new neuroscience evidence exists that clearly and unequivocally indicates that "emotions lie at the heart of political campaigns. Campaigns design television and print ad campaigns to play upon our emotions and candidates' own emotions *leak out* and affect how they are perceived. As the centrality of emotions (and emotional appeals) in politics has become more generally accepted, the focus has naturally turned to a new question: *How* do emotions affect political judgement and behavior?" (Renshon et al., 2015).

The emerging use of neuroscience techniques and evidence in electoral politics is changing the way political actors (both political parties and politicians) build their political brands and communicate with their audiences. As Robert H. Blank asserts, "The array of techniques and strategies for intervening in and imaging of the brain is expanding rapidly, and these techniques will be joined

in the future by even more extraordinary capabilities. In addition to their use in treating neural diseases and disorders, these innovations promise increasingly precise and effective means of predicting, modifying, and controlling behavior" (Blank, 2013).

An increasing body of neuroscience evidence suggests that "Election outcomes correlate with judgements based on a candidate's visual appearance, suggesting that the attributions viewers make based on appearance, so-called thin-slice judgments, influence voting" (Spezio et al., 2008). According to Elizabeth Svoboda, who writes for the MIT Technology Review, neurotechnology is currently "at the forefront of a quiet political revolution. Campaigns around the world are employing [neurotechnology]… to penetrate voters' unspoken feelings" (Svoboda, 2018).

Given that human behavior shows a profound irrationality, how can voting behavior be explained? According to Justin Wolfers – a scholar whose work lies at the intersection of economics and public policy – "voters make systematic attribution errors and are best characterized as quasi-rational" (Zoëga Ramsøy, n.d.). Today's political campaigns are being waged in the brains of the voters, and today's neuropolitical consultants are better equipped to tap voters' unconscious processes taking place in the depths of their brains. Neuropolitical consultants are capable of ascertaining voters' receptiveness to campaign messages by "observing their spontaneous responses: an electrical impulse from a key brain region, a split-second grimace, or a moment's hesitation as they ponder a question. The experts aim to divine voters' intent from signals they're aware they're producing. A candidate's advisors can then attempt to use that biological data to influence voting decisions. […] Biometric technologies raise the stakes further. Practitioners say that can tap into truths that voters are often unwilling or unable to express" (Svoboda, 2018).

Data acquired by numerous fMRI (functional magnetic resonance imaging) experiments provides valuable information for understanding how the human brain makes political decisions. Anna Sánchez-Juárez summarizes these research studies eloquently by stating: "Making decisions about who we can and can't trust is important for our security and well-being, both as individuals and as a group. Many citizens are not always sure who to vote for, because the evidence provided by the available information is often unclear and there is no way of knowing how truthful the candidates are being in their statements. In difficult choices such as these, a number of international studies based on experiments performed using neuroimaging techniques have shown how the brain is sometimes unable to function rationally and, in such situations, resorts to a series of short-cuts" (Sánchez-Juárez, 2019). Diego Redolar, a member of the Universitat

Oberta de Catalunya's Cognitive NeuroLab research group, argues that "Politicians' image is one of these short-cuts. A candidate's emotional expressiveness and facial structure are also key factors in big decisions such as these. The brain processes a person's face and spontaneously and automatically generates an attribution of trust or distrust. It involves key structures in processing emotional information, such as the amygdala and the anterior insula" (Sánchez-Juárez, 2019).

5. Conclusion

Antonio Damasio, one of the most prolific neuroresearchers alive, opined that people tend to downplay the role emotions play in decision-making. Damasio suggested that "Society has focused on science and technology, but the key to everything is the fact that we are beings with feelings. All the rest, such as intellect or our world view, comes afterwards" (Sánchez-Juárez, 2019). The question that naturally emerges is: Can brain science, and, by extension, neuropolitics, manipulate voters? Patrick S. Inniss succinctly captures the issue of neuropolitics and related dangers and challenges by stating that: "The application of science and technology frequently includes some inherent dangers. Deeper knowledge of how the mind works, and of the varying cognitive patterns associated with political beliefs, may have the result of improving our understanding of each other, or it may facilitate the automation of demagoguery. This could have an effect just as devastating to society as any threat posed by technology. The time to start thinking about these issues is already upon us" (Inniss, 2017).

The human brain remains a mystery. Neurobiologist Lu Chen claims that "We know very little about the brain. We know about connections, but we don't know how information is processed" (Lam, 2016). There is no doubt that neuropolitics significantly contributes to the ongoing political dialogues by engaging the multidisciplinary expertise of neuroscience, political science, neurology, psychiatry, psychology, and philosophy (UCI Center for Neuroopolitics, n.d.). Numerous scholars representing diverse disciplines indicate that neuropolitics – as an emerging academic domain – is inherently biased. Niklas Altermark and Linda Nyberg opine that "this new paradigm of examining politics through studies of the brain takes certain things for granted. Among these assumptions is a belief that the mind if equal to the brain, that the glorification of neuroscience to understand politics glosses over methodological problems with this kind of research, and that much of this research fails to address associated ethical issues" (Ingle, 2022). Ethical questions should be posed and should be considered by neuropolitical consultants and scholars who engage in neuropolitical research.

More than 2300 years ago, Aristotle claimed that humans are political animals. Surely, Aristotle's assertion has stood the test of time. Darren Shreiber suggests that neuropolitics can help us understand the intricacies of the human brain, decision-making, and political affiliation: "Neuropolitics is a relatively new filed connecting research in political science and neuroscience, which has the interdisciplinary goal of transforming both fields. If human nature is political, then studying our brain without considering its role in politics is just as flawed as ignoring the brain when studying politics. […] Already, some are engaged in practical neuropolitics, but the ethical implications and the threats to democratic deliberation are woefully underappreciated – and under-theorized. Days after a recent New York Times article highlighted the use of neuropolitics methods to sway a Mexican political campaign, the governing party vowed to stop using the approach. The founder of one of the firms involved claimed, "We cannot read minds and of course we cannot change them." However, the developing work in neuropolitics suggests that these aims are increasingly within reach. The reporting intimates that campaigns around the world have already started using these tools, including for presidential elections in the U.S." (Schreiber, 2018).

It is well accepted by neuroscience scholars that brands can significantly alter human brains in surprisingly profound ways. Brands have the capacity to change how people conceptualize themselves and how they communicate their identities out to the social world. Brands also have the capacity to make people experience emotions that have virtually nothing to do with the utilitarian and/or functional properties of the product/service/idea/place/ideology/political party/politician/artist, etc. Brands reside in human brains. They form neural webs of associations and memories. When these connections are dense and positive, it can profoundly change human behavior, inducing people to make certain decisions that might benefit the brand in question. As political branding has become a critical part of political practice, politicians are increasingly turning to neuroscience to find new practices that can help them win in electoral politics.

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Chapter 2

Innovative Tourism Startups and Business Model: Challenges in Application

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1. Introduction

Among the most crucial protagonists of economic and financial development, startups assume increasingly distinctive and unique roles (OECD, 2017) by promoting innovation, contributing concretely to the creation of new jobs, and developing new sectors of activities. In this respect, innovative startups emerge as key contributors to boost economic growth by the exploration of market opportunities and introducing novel products/technologies and novel ways of organizing processes and activities. Carland et al. (1984) define them as "entrepreneurial ventures pursuing profitability and growth through innovation practices". Barboza and Capocchi (2020) highlight that innovative startups are considered new ventures that may contribute "to broadening business culture in the country by creating an environment which is more open to innovation, and which attracts investment and talented individuals, either in the form of increase creativity or the capacity to applied otherwise tacit knowledge" (p. 2574). They also aim to grow quickly and scale rapidly and internationally (Stam 2015; Spigel 2017). Thanks to their dynamism, they can attract more investments, capital, resources, and capabilities, operating in interaction inside several kinds of networks (Davenport, 2006; Zott & Amit 2007; Amaral & Figueira, 2016).

Even if the literature in this field is extensive, contributions have mainly focused on definitions, actors, attributes, creation, and growth of innovative startups in general, considering this class "as a whole" (see, e.g., Cumming et al., 2017; Spigel, 2017; Bhawe & Zahra, 2019; Matricano 2020a, Centobelli et al. 2022). For instance, Barboza and Capocchi (2020), specifically aim at the managerial challenges of knowledge spillover impacts on employment level. Matricano

(2020b) investigates the effect of R&D investments, highly skilled employees and patents on the performance of Italian innovative startups.

Instead, the analysis of key innovative startup features in specific sectors is understudied. Previous works have mainly studied e-business model in high-tech sectors, but research regarding the travel and tourism sector are scarce. With this in mind, our research attempts to fill this gap by exploring innovative startups in the tourism sector. We provide descriptive evidence illuminating the relevant context of tourism, with peculiar cases of innovative tourism startups to gain an understanding of their business models' evolution.

Although tourism is one of the most important economic sectors, it is facing increasing and pressuring challenges related to digital transformation and the concrete application of some digital technologies (i.e., artificial intelligence, augmented and virtual reality, blockchain, Internet of Things, etc.). Within this arena, in Italy, innovative tourism startups assume a relevant role as drivers of innovation and sustainability. In this research stream, the critical success components of innovative tourism startups for creating, delivering and capturing value for firms and their stakeholders has already been underlined (Abbate et al. 2019).

We focus our research on innovative tourism startups operating in the Italian context, which seems highly salient for this study. Italy is currently living in a wave of innovative entrepreneurship, also capturing policymakers' attention. In Italy, facilitations for innovative tourism startups have been defined by the lawmaker with the aim of promoting national tourism and supporting initiatives/activities characterized by the development and use of advanced digital technologies.

Starting from these assumptions, our study intends to identify the state of the art of innovative tourism startups by developing an overview of the evolution of the innovative tourism startups' business models (from 2014 to 2023) and the legislation affecting their development in Italy.

Using a sample of Italian innovative tourism startups, we aim to respond to the following research question: since their inception, what challenges do these types of startups face and how do they fit into the competitive arena?

It is worth pointing out some highly valuable challenges and perspectives that these firms have to face in engaging in innovation, exploiting digital technologies, and moving to a service orientation. They are specialized in niche tourist markets, rooted in geographical areas and their survival and growth can be considered a result of establishing relations within networks. Searching for new ways to be competitive, innovation and digital processes are crucial steps for their effectiveness in a global market.

The paper is structured as follows. The next section describes the literature background, considering threats and opportunities related to some specific Italian laws. Section 3 explains our research design and data collection. Section 4 presents our main finding and discussion focusing on value proposition, capabilities, and market. The final section concludes, and several theoretical and managerial implications are proposed, by providing some directions for further research.

2. Literature Background

As underlined in the McKinsey Report (2023), startups assume an essential role in spearheading innovation that benefits consumers, businesses, and industries, by reshaping daily life and the global economy and by contributing to the promotion of sustainable development. Startups have been mainly studied in finance (Davila et al., 2003) and management literature (Bianco et al., 2022), by underlining abilities and capacities to create innovation (Skala, 2019), factors that lead to startup success such as team composition (Blagburn, 2016), alliances and cooperation (Shan, 1994; Baum et al., 1996), effects of external financial events/shocks on their launch and survival, changes in the management strategies and structure, and elements concerning the scalability of their business model (Mollick, 2014). In general, the existing literature emphasizes that startups are examined as a particular form of nascent companies distinguished from traditional new ventures (Skala, 2022), observing that startups can grow quickly, operate and dominate the industry at an international level, and take advantage of multiple Internet opportunities. Several contributions highlight that startups are characterized by three different attributes: i) innovation (i.e., bringing disruptive technologies, developing new products and/or services, defining and applying new business models, improving and/or restructuring existing solutions); ii) digital technologies capable of activating the levers of exponential growth; and iii) business model, as a way, a rationale for how an organization specifically creates and delivers value to the customer and monetizes that value (Johnson et al., 2008; Teece, 2010; Zott et al., 2011), by observing that the critical role of startup business model is the scalability, and underlining that the strong growth of metrics (i.e., number of customers, users, or traffic) in scalable models is over-proportional to the scale of assets involved. In this respect, Blank (2010) has underlined that a startup can be contemplated as a temporary organization with the objective of finding out a business model that is scalable and repeatable in time, by specifying that startups must have the characteristics of temporary (as a transitory phase with the goal of growing to become an enterprise or to be

sold to another one), of experimentation (as a search for a business model in order to find the right formula that makes it profitable and innovative) and scalability and repeatability (its processes have been able to be replicated). However, startups often operate under high uncertainty, suffering a scarcity of human and financial resources, dealing with the liability of newness (Gimenez-Fernandez et al., 2020), and trying to utilize lean and agile management methodologies (Ries, 2011; Picken, 2017). Within the context of startups, the typologies of tourism innovative startups have been regulated by the Italian lawmaker with Legislative Decree No. 83 of 31 May 2014, later converted into Law No. 106/2014 – and qualified as an additional type with respect to the general innovative startup regulation by the no. 179/2012 decree – with the primary objective of supporting the promotion of national tourism by exploiting innovation and sustainability (Caprara, 2015).

From 2015, when the legislation came into force, until the end of 2019, the number of innovative startups operating in the field of digital tourism and innovation was extremely significant and growing, with an annual increase of 13% (Quarterly reports from the Ministry of Economic Development). The sector was therefore performing extremely well and was also of particular interest to investors. However, following the pandemic, the tourism sector suffered a direct considerable crisis due to a long period of time without the opportunity of travelling, and indirectly by the resulting economic and social crisis, which severely affected the economic condition of travellers. From a statistical point of view, this is represented by a 50% drop in the establishment of new companies in the year 2020–2021 compared to 2018–2019, and losses amounting to more than 75% of the turnover for many of the companies involved (2021 Survey Italian Tourism Startups Association).

However, the resilience characterizing innovative enterprises has been a useful opportunity for Italian tourism startups to survive the pandemic.

Before Covid, innovative tourism startups were divided into two entrepreneurial types (Gabrielli, 2019): B2C (business-to-consumer) ones, which tend to aggregate various offers within a single platform, disintermediating the structure-customer relationship; and B2B (business-to-business) ones, which, on the other hand, offer help to operators to implement the activities of the structures and services to improve the customer experience. A large group was therefore dedicated to search, booking and payment by connecting the customer with accommodation facilities or museum and cultural sites through e-commerce and e-ticketing tools. Another part operated mainly in the hotel sector and in the so-called business tours & experiences proposing or enriching the offers of travel agencies and tour operators.

3. Research Design and Data Collection

The study has an exploratory and inductive nature, using a mixed approach to achieve the research goal above mentioned. Specifically, the analysis is characterized by two different steps. The first step was carried out by taking as reference the Unioncamere dashboard which, in the last four months of 2022, indicated the presence of 66 innovative tourism startups exercising different economic activities (MIMIT, 2022). The need to focus on a homogeneous category of companies has led, in the second step, to a screening of the sample, through the identification of the category of representative activities that have most absorbed technological innovation in recent years, i.e., the "Activities of services of travel agencies, tour operators and booking services and related activities", grouped in code 79 ATECO (the classification of economic activities adopted by ISTAT).

To answer our research question, we used the AIDA database to identify the group of innovative startups with ATECO code 79 born between 2014 and 2023 and analyze their evolution. From data available as of May 2023, there are 28 innovative startups.

The world of startups typically has a short life, as startups are destined by their nature to become scale-ups, merge with other companies or associate in a network, changing their form and, sometimes, even their corporate name. Before focusing on existing startups, we tried to understand the evolution of this phenomenon from 2014 (year of l.d. 83) to today. In short, it is possible to see how this phenomenon, which seems typical of the centre-north of Italy (Fig. 2.1), has increased company turnover and the number of employees engaged in achieving strategic objectives but has strongly felt the pandemic crisis, suffering a collapse in the net financial position from which it has been laboriously emerging only lately.

In the third step, we focus our attention on every startup through desk research on their websites. In this step, the sample was further reduced, eliminating the startups in liquidation and those whose websites were not fully useable due to a lack of information. Furthermore, startups with websites that are impossible to reach, with insufficient information or dedicated to business services not strictly related to mere tourism were excluded.

Our final sample, after the third step, is composed as illustrated in the following Table 2.1. After skimming, a desk research about the firms and their peculiarities is done to pinpoint differences and similarities among these organizations that, all together, face the challenges of resilience and succeed. A qualitative approach is used in this phase. Through a web content analysis (Krippendorff, 2004), the specific value propositions of the identified startups are highlighted.

Given the exploratory and inductive nature of the work, the coding scheme was developed in the reading process to identify meaningful concepts and patterns.

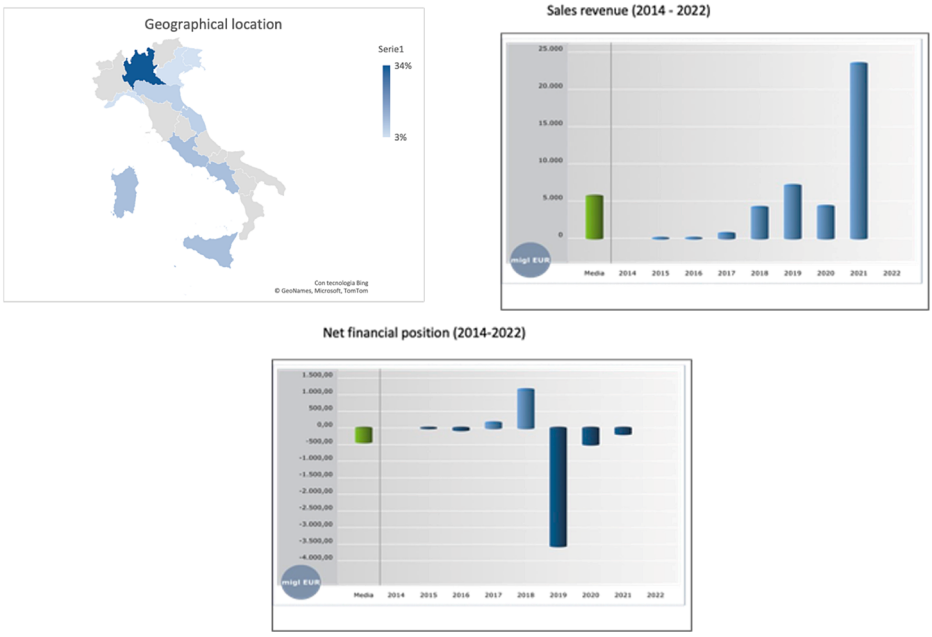

Figure 2.1. Some highlights on innovative startups cod. ATECO 79
Data source: AIDA database May 2023.

Table 2.1. Final sample of Italian Tourism Innovative Startups

	Startup	Activity description	Website
1	Digital Destination Company	Innovative digital platform for leisure tourism.	https://digitaldestinationcompany.com/ http://amareclub.it
2	Wonderful Italy	Hospitality and travel agency activities	www.wonderfulitaly.eu
3	Meeters	Experiential tourism. Tour operator activities	www.meeters.org
4	181travel	Distribution of tourist experiences. Tour operator activities	www.181travel.com
5	Trueitalian experience	Experiential tourism. Tour operator activities	www.trueitalianexperience.it
6	Ticketsms	Ticket services for theatre and sports events and other recreational and entertainment events	www.ticketsms.it
7	President Voyage	Booking services and tourist activities not carried out by travel agents.	www.presidentvoyage.com
8	Cicero	Experiential tourism and other booking services and tourist activities not carried out by travel agents.	www.ciceroexperience.com

table 2.1 cont'd

	Startup	Activity description	Website
9	Innovenia	Travel agency activities and tour operator activities	www.elvytours.com
10	May	Booking services and tourist activities not carried out by travel agents	www.mayvenice.com
11	Tramundi	online platform for organized trips. Tour operator activities	www.tramundi.it
12	Bagdroppers	Booking services and tourist activities not carried out by travel agents	www.bagdroppers.com
13	Viaggitalia	Digital intermediation services. Travel agency activities	www.viaggitalia.srl
14	I – Strategies	Booking services and tourist activities not carried out by travel agents	www.i-strategies.it
15	Hili	Experiential tourism. Travel agency activities	www.hilitravel.com
16	Hotiday	Digital hotel and digital concierge. Travel agency activities	www.hotidayhotels.com
17	Gluebus	Bus sharing system. Travel agency activities	www.gluebus.it
18	Maptya	Tourism enabling technology. Tour operator activities	www.elestatravel.com
19	FE.DA.MA	Travel agency. Member of Welcome Travel Group SpA	www.safarviaggi.it/

Source: own elaboration on AIDA database.

In order to decrease the subjectivity of the process, a continuous comparison among research was made "to increase the credibility, transferability, reliability and confirmability of the results" (White and Mash, 2006).

4. Findings and Discussions

The sample presents a homogeneity in terms of accessibility, compatibility with various browsers and devices, and usability in terms of content clarity and navigation methods and highlights different perspectives in pursuing the aim of offering innovative tourism services. Specifically, peculiar approaches emerge on different value propositions and focus on market.

4.1. Value Proposition and Capabilities

As just mentioned, we have identified distinct categories of value propositions. In particular:

1. a new way of travelling,
2. safe travel,

3. secure booking,
4. experiential tourism,
5. operators in the tourism sector.

The innovative tourism startups that offer *a new way of travelling* make the most of the potential of digital technology. *Digital Destination Company* represents the answer to the market evolution in the tourism and digital distribution sector. It is a point of reference for booking hotels, holidays, transport, excursions, and travel services, expanding destinations and markets through technological development integrating all elements into a single app. *May*, a startup specializing in culture, offers customized solutions and organizes tours and exclusive cultural activities according to customer needs. *Tramundi*, an online platform for organized trips, connect travellers with the best tour operators and local realities to allow them to discover the world and get to know new cultures by travelling in groups. An innovative idea that offers two fundamental aspects in the tourism sector: local-to-be itineraries and total immersion.

In the second group, there are innovative startups offering safe travel without giving up the charm of a holiday. *Wonderful Italy*, by several directly managed holiday homes, wants to discover the most original Italian wonders, less beaten by mass tourism and focuses on safety. To guarantee customers' well-being, it has added to its holiday model an operational plan for health "WITH program": Wonderful Italy rent out entire places so that guests, in addition to the opportunity to live like locals, do not have to share spaces with others, as happens in traditional tourist accommodations. Another representative experience is the *President Voyage Jet*. Designed for the most demanding customers, offers the best jet charter service to customers who want to travel in a comfortable, safe, and stress-free environment, connecting all jet charter needs with its travel expertise. It manages concierge services with complete customer assistance, thanks to its extensive network of trusted airline operators and careful attention to detail, which has earned us a leading position in the private jet industry.

The third group is aimed at *secure booking*. Among these firm, there is *TicketSms* the digital platform designed for the smart management of any type of event. A digital ticketing system, created by event organizers for event organizers with the objective of the best end customer experience. TicketSms believes that respect for the environment is a fundamental value, and it strives to reduce its ecological footprint. Through the digitalization of tickets, the consumption of paper and ink is reduced, eliminating the costs of resources for ticket delivery. Another interesting service is the booking service offered by *Bagdroppers* and regards custody and integrated movement of luggage, a service for those who are travelling for vacation, or business, who are out for shopping or for work,

if the hotel checkout is in the morning, plane or train in the evening, and you don't want to go back to the hotel to collect your luggage or you do not want to have luggage with you, and you want to keep it safe. The guarantee of a service is characterized by reliability, transparency, ease of use, and security. Bagdroppers wants to overcome the current concept based on traditional and static collection points only (custody services of stations, airports, and hotels). Several key partnerships aim to increase both the number of customers and the potential of the service. All members of the network can become part of the community on the platform: a "location reputation system" will be created, with which Bagdroppers users will be able to interact.

In the group *experiential tourism*, there are several platforms that aggregate different local experiences, from culture to sport, with the aim of developing new products that allow travellers to discover areas and activities. For example, *Meeters* is a tech-travel startup combined with a community typical of digital products. It promotes meeting between people for finding new friends easily and safely. The app represents a turning point regarding the service offered, as it allows one to internalize all aspects today left to external social networks, transforming Meeters into a service to be used every day, increasing engagement and potential of retention. *TrueItalian Experience* aims to aggregate the main players in the tourism chain to offer the best experiences in Italy. Selection of experiences, but also all related tourist services: flight, transport, hotel, transfer, car rental, insurance and everything will be available both as a discounted package offer and as a menu, with the possibility of customization. Partnerships guarantee both quality and capillary coverage selecting and offering sustainable, distinctive, and inclusive experiences. *Cicero Experience* represents the new frontier of experiential tourism, with a digital platform that makes top-level services bookable. It is not a marketplace of experiences owned by others but a retailer with full control working together with its suppliers to build experiences that best express the potential of a profession and a territory. People and their stories are the keys to transforming simple travel into unforgettable experiences. With this approach, Cicero has full control in the phases of a) product creation (to express its full potential and differentiate it from the mass market), b) definition of pricing, promotion and placement (to better position it against competitors and comparables), and c) management of availability (to optimize the offer and thus maximize the margins of suppliers and one's own). Furthermore, *I-Strategies*, is a startup that, alongside the development of narrative, creative and digital projects, deals with promoting experiential tourism within the Marche region.

Other startups *help operators in the tourism sector. Hotiday* is an instant buyer who purchases unsold hotel rooms with payment before the start of the tourist

season. A digital hotel that manages some rooms in selected structures located in the best locations and allows its registered guests to earn on every booking thanks to travel cashback and to take advantage of discounts and exclusive offers. Guests have a digital concierge available 24 hours a day. *Gluebus* makes "drink-driving obsolete" thank to a digital platform that allows event providers to offer a shuttle service based on an automatic bus-sharing system. Bookings are collected via the digital platform gluebus.com, and then they are processed by artificial intelligence that defines the bus routes. The AI brings together the requests of groups of passengers (coming from different collection points but with the same destination) and calculates the most efficient route for each individual shuttle, maximizing saturation and, consequently, reducing transport costs and CO2 emissions. *Maptya* is a new-generation tour operator that uses an enabling technology for the world of tourism. Its travel platform includes a family of brands, each with its own personality, based on communities and areas of interest. The value and quality of the proposals are guaranteed by a team of collaborators and a network of partners in specialized and niche segments. *ViaggItalia* provides highly innovative digital intermediation services for the offer of tourist products for Italian holidays through the CLiCK iT portal.

4.2. Market Focus

Innovative tourism startups respond to new market needs: from booking services to digital and territorial experiences. The vast majority offer services to companies according to a B2B or B2B2C model, some innovative startups address directly and exclusively the final tourism customer. Digital reservation systems for beaches and places of artistic interest have become essential. Smart check-in/out services allow accommodation facilities to manage online customer acceptance.

Services offered for tourists, and operators, as intermediaries, are mainly dedicated to leisure tourism. In this segment, for example, *Tramundi* simplifies the organized group travel market by allowing all travellers to find the trip that best suits them. Making every trip memorable, guaranteeing assistance and total immersion, in contact with the realities and people of the place. Tramundi, is a digital travel company created by travellers for travellers that offers itineraries all over the world thanks to expert local guides. Its targets are young professionals passionate about travel and culture and accustomed to technology, proposing, also thanks to the support of local guides, authentic destinations and experiences that would be difficult to live and organize independently.

Startups for experiential tourism offer new products, enhancing the entire supply chain tourism involved. Innovative solutions allow travellers on the one

hand to purchase trips and experiences in advance and book hotel rooms at advantageous prices; on the other, they allow operators in the sector to have liquidity to face this still complicated period. *Cicero* has a strong focus on the Travel Activities market, the third largest segment in the tourism sector after Travel and Accommodation. Italy is in second place globally after the United States in terms of market value and represents a huge opportunity given the jagged panorama of competitors, mostly not very digitized.

Few startups act in the field of environmental sustainability, followed by smart mobility. Gluebus will become the common solution to reach events, on particular nights, when public transport is absent or insufficient. The distinctive characteristics of *Maptya* as a tour operator are the ethical, sustainable approach, with attention to the smallest detail and the constant search for innovative ideas. For the conception, planning and realization of experiences and trips, it makes use of a group of experts, with diversified and specific skills, engaged in a real curatorship: an artistic direction.

In summary, these startups, in addition to being technologically innovative, have chosen to design a business model by deciding to work around specific focuses. Whether it is the travel experience, safety, sustainability, smart mobility, or something else, distinctive activities allow them to be distinguishable and, therefore, transform each event into an opportunity to quickly rethink and pivot (Abbate et al., 2021).

5. Conclusion

Several answers to the innovation need of the Italian tourism sector come from the world of startups. The crucial point consists in identifying and recognizing those at the most advanced stage and therefore ready to give full support to the growth of the sector.

Our contribution to the research gap is highlighting that, although the positive peculiarities underlined – such as the creativity in increasingly customizing the offer, acting on business models that meet new ways to travel; the focus on safety and security travelling; and the desire to network to enforce one's positioning – are strengths on which to leverage, on the other hand, there are factors which seem to hide exogenous constraints that forms of isomorphism try to overcome.

The first aspect is the prevalent location in the central-northern regions which may suggest the choice of locating in areas with better responses in terms of infrastructure. So, the challenges for policymakers to take up will be to improve

the services offered to businesses in areas of the country rich in "treasures" to be shared with tourists but more disadvantaged at an infrastructural level.

The other relevant aspect is the fact that, although enjoying specific benefits, as has been correctly pointed out (D'Ambrosio & Vernassa, 2023), perhaps, the duty to develop 'original' rather than 'high-tech' software, as is required from all innovative start-ups, could allow innovative startups to access the software through the market and seek their "own" technological innovation not so much in software programming but in the choice of which software to implement and, above all, in "how" to make it embedded in the proper information system.

The previous two crucial gaps, according to our point of view, show that it is clearly fundamental for tax and sector lawmakers to deal with financial and management strategies aimed at enabling these enterprises to grow within the country's entrepreneurial ecosystem.

To confirm this assumption, suffice it to say that the National Recovery and Resilience Plan intersects with the so-called 'tourism package', which envisages 2.4 billion to be allocated to actions to promote the competitiveness of tourism enterprises, the appeal of locations and the digitalization of services, not neglecting the issue of environmental sustainability with calls specifically for startups in order to create favourable conditions to achieve strategic investments.

Needless to highlight that this research, still exploratory and – for this reason – difficult to generalize, allows us to shed light on a relatively recent phenomenon which is increasingly characterizing the new tourist offer and the way of using the services connected to it. Understanding growth trends and the evolution of the challenges they will face will allow managers and policymakers to identify the right paths towards ever more virtuous choices.

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Chapter 3

Outlook for a Green Cosmetic Industry in Vietnam Following Porter's Diamond Model

Hanul Choi, Mark C. Hoffman

1. Introduction

1.1. Background of Cosmetic Industry in Vietnam

Over the past decade, the beauty and personal care market in Vietnam has grown quickly. According to Statista (2023), the revenue of Vietnam's beauty and personal care industry has reached $US2.36 billion. Statista projects the growth to continue at 3.32% annually through 2027.

The market is dominated by well-known international brands like L'Oréal and Nivea. Vietnamese domestic brands have only a 10% market share. Even these brands often import many of the raw materials used to make their products. As a result, Vietnam's trade deficit in cosmetics increased by 233% between 2017 and 2021, to US$169 million (ITC Market Analysis, 2023).

Could Vietnam's recent success in the manufacture of phones, furniture, textiles, and shoes be duplicated for beauty and personal care products? To this end, the South Korean Ministry of Education has granted funds to establish a Department of Cosmetic Engineering at Ho Chi Minh City University of Technology (HCMUT), which would be Vietnam's first cosmetic engineering department (Ho Chi Minh City University of Technology, 2022). Initiated in 2021, the project has recently finalized the construction of advanced laboratory facilities and is engaged in curriculum development and textbook publishing.[1] As of yet, the place of green products in the research and education agenda of the project has not been established. Yet, the world-wide shift in this market toward green products may offer an important opportunity for Vietnam to become a major producer. This article uses Porter's Diamond Model as a framework to analyze

[1] The first author of this article is the Project Manager of the project to HCMUT.

Vietnam's potential as a manufacturing hub of green beauty and personal care products. This is intended to impart information about the HCMUT Cosmetic Engineering project and serve as a basis to start collaboration with Vietnam's nascent green cosmetic industry.

2. Vietnam's Domestic Conditions

2.1. Factor Endowments

Porter's Diamond Model is a framework developed by Michael E. Porter in his book, *The Competitive Advantage of Nations*, which outlines how a country can achieve and sustain competitive advantages in the international business environment. The model identifies four sets of determinants of a country's competitive advantage. The first of these sets are the Factor Endowments, which are a nation's available human skills, natural resources, and infrastructure.

Labor Force

The most important factor endowment for the Vietnamese beauty and personal care products industry is the labor force, which is young and inexpensive, but still relatively low in skill level.

The Vietnamese labor force skews young, providing new and expanding industries with energetic and adaptable workers. In 2021, an estimated 51.8 million Vietnamese were aged 15 to 49 (UN Department of Economic and Social Affairs, 2022). They constitute a 69% share of the 15 and over population.

Labor costs are also relatively low in Vietnam, so the cost of production is kept low. The average monthly earnings of Vietnamese employed in manufacturing was US$308 in 2020 (ILO Department of Statistics, 2023). However, the urbanized regions around Ho Chi Minh City and Hanoi have much higher wages than other cities and rural regions. The minimum wage in these two urban areas is currently set 44% higher than in the least developed rural areas (Vietnam minimum wage, labor law, and employment sheet, 2023).

Vietnam's relatively low education level is partially responsible for a relatively low productivity rate. Measured as GDP per hour worked in 2022, Vietnam's worker productivity was US$7,972.

According to Nguye and Dinh (2019, p. 82), "high-quality human resources in Vietnam are insufficient in number and poor in quality." Paradoxically, the Vietnamese economy has experienced trouble absorbing university graduates into the work force, evidenced by their higher unemployment rates (Siagoneer,

2017; VNS, 2016).[2] Several research studies concluded there should be better coordination between universities and industries to prepare students to fill needs in the labor force (Kim, et al., 2015; Tran, 2016; Tran, et al., 2022, 2023; Vo, 2021).

Natural Resources

Vietnam has the natural resources to be a significant supplier of natural ingredients to both domestic and foreign producers of beauty and personal care products.

Vietnam is known for its tropical monsoons, hot temperatures, and high humidity. This reputation belies the reality of Vietnam's diverse range of climates and topographies. Vietnam spans over 15 degrees of latitude from north to south. It has a coastline of 3,260 kilometers, while 75% of land area is hilly to mountainous. The result is that Vietnam is the 16th most biologically diverse nation in the world (World Conservation Monitoring Center, 1995), hosting plants that flourish in temperate and tropical climates and in mountains, rain forests, river deltas, and oceans.

Herbs growing in Vietnam with high potential use in cosmetics include allium sativum (garlic), aloe vera, centella asiatica (gotu kola), curcuma longa (turmeric), hibiscus rosa-sinensis, lawsonia inermis, (henna), tamarindus indica L. (tamarind).

Also present in Vietnam are bioactive ingredient of potential use in cosmeceuticals. Cosmeceuticals are the products that lie on the boundary between drugs and cosmetics, having both therapeutic and cosmetic benefits (Dureja, et al., 2005 Hammes, 1997). The term "cosmeceuticals" is a portmanteau of the words cosmetics and pharmaceutical which means "a cosmetic that has or is claimed to have medicinal properties, especially anti-aging ones" according to the Google Dictionary from Oxford Languages. Although the word has been in use since the 1980s, it is not a legal category in any country's regulatory regime (Bolan, 2005; Pathen, 2022). Fortune Business Insight (2022) estimates that the global cosmeceuticals market stood at US$50.75 billion in 2021 and is projected to grow to US$96.23 billion by 2029. Cosmeceuticals can be made from both synthetic and natural ingredients. Like other beauty and personal care products, the trend in the cosmeceuticals market is toward incorporating natural products (Joshi & Pawar, 2015). One potential bioactive ingredient for cosmeceutical skin care products is the PHNQ pigment extract from Vietnamese sea urchins (Vo, et al.,

[2] This phenomenon is not unique to Vietnam. Unemployment and underemployment of recent college graduates have been documented as a problem elsewhere, including China (Wakabayashi, Qian & Chien, 2022), Malaysia (Kadir, Naghavi, Subramaniam, & Harim 2020), South Korea (Lee 2020), and the United States (Korn 2018).

2020). Seaweed also has high potential in the production of cosmeceuticals (Grillo, et al. 2021; Kalasariya, et al., 2022).

Intertwined with the increasing appeal of products with health benefits and natural ingredients is interest in herbs and oils used in traditional medicines (Costa, 2015). Historically, Chinese traditional medicine has been practiced in Vietnam, along with an indigenous tradition known as Thuoc Nam. Use of traditional medicines has been documented and studied in the modern population of Vietnam (Hoang 2011) and in the Vietnamese diaspora (Monnais, 2011; Nguyen, et al. 2016). Vietnamese herbs used in traditional medicine that might be used in the manufacture of beauty and personal care products include Ageratum conyzoides (a.k.a,: cứt lợn, billygoat-weed, chick weed), Embelia ribes (a.k.a,: thun mun, vidanga, false black pepper,), Sapium sebiferum (a.k.a,: sòi trắng, Chinese tallow tree, popcorn tree), and Kalanchoe pinnata (a.k.a,: thuốc bỏng, cathedral bells, air plant). (Narayanaswamy & Ismail, 2015; alternative names from IPNI, 2023; Vietnam Plant Data Center, 2023).

2.2. Demand Conditions

The second set of determinants in Porter's Diamond Model are the Demand Conditions. These are the nature and size of domestic demand for products, services, and technologies within a country. Domestic demand can be a major driver of innovation and technological advance as local companies have an incentive to develop new products and services to meet the needs of the local market.

Foreign brand preference

People are more likely to desire products made in a country with a favorable image. This is called the "Country of Origin Effect" (COO) and is the most researched aspect of international consumer behavior (Bartosik-Purgat, 2018). The COO effect has a been found significant in many beauty and personal care product markets, including China (Han, 2020), Indonesia (Agustini & Devita, 2019), the Philippines (Barrameda, et al., 2019) and Thailand (Pandy, et al.). It follows that it is also found in Vietnamese consumers, who perceive foreign products to have higher quality, more sophistication, and better customer service than domestic products (Mai & Smith, 2012). Specific to beauty and personal care products, Ngoc (2014) found that COO had a significant influence on Vietnamese consumer perceptions. Long, et al. (2017) describe a preference for products from developed countries with high technology and well-known brands. The COO effect partly explains why domestic personal care brands have less than a 10 percent market share. Korean brands are the most popular, with a 30 percent share,

followed by European (23%), Japanese (17%), Thai (13%), and U.S. (10%) brands (US International Trade Administration, 2021).

E-commerce

Vietnamese consumers of beauty and personal care products are gradually shifting to on-line shopping options (Deloitte, 2022). Like most industries, the personal care industry has been dramatically affected by COVID-19, with the majority of Vietnamese consumers intentionally spending less on personal care products (Tran, 2021, p. 98). Fear encouraged contactless purchase and delivery, fueling a rapid adoption of e-commerce options. Thus, despite the general economic downturn in Vietnam, both academic (Nguyen, et al., 2021) and industry (YouGov, 2021) research reports that on-line spending saw a modest increase, especially in food and personal care products.

Despite its recent growth, Nguyen, et al. (2022) conclude that several major obstacles remain for Vietnamese e-commerce, "including low consumer confidence when shopping online, online payment is not popular, and delivery and fulfillment services are not yet available to keep up with demand" (p. 5836).

Social Media

Social media is a major influence on the dynamics of cosmetic consumption. Social media influencers share their choices of beauty and personal care products, their use, and their overall consumer experience. Young Vietnamese are swayed by the endorsements of celebrity influencers in general (Nguyen, 2022) and specifically for personal care products (Dang, 2021).

The Rise of Green Cosmetics

World-wide, consumer demand in the personal care product industry has been shifting toward products that are perceived as natural, organic, ethical, sustainable, and healthy (Amberg & Fogarassy, 2019; Kumari, et al., 2022). These concepts are distinct, yet fluid enough in definition and malleable enough for marketing that they blend into a common life-style image that consumers increasingly desire.

Modern natural ingredients include liquid oils, waxes, butters, unsaponifiables, and essential oils (Decker, 2021). For manufacturers, creating products using these natural ingredients has become a priority. This shifting preference is increasing the competitive advantage of localities where these ingredients originate.

As in the rest of the world, Vietnamese consumers' interest in a product's health and quality is becoming greater. Increasing incomes means consumers have greater ability to purchase products that match this desire, even when

the product is more costly. Thus, the natural and organic segment of the cosmetics market is growing (Pham, 2022; VNS, 2019).

Green cosmetics are not just about the nature of the ingredients, but also the nature of production. Supplying natural ingredients to cosmetic producers can do further harm to Vietnam's challenged environment. Thuaire, et al., (2021) documents biodiversity loss caused by "population growth, overexploitation of natural resources, illegal logging, and the expansion and intensification of agriculture" (p. 109). Building a new industry in a sustainable way is challenging but required by public policy and favored by the target consumers. A Benchmarking Company 2022 survey reported 64 percent of respondents believed that sustainability was an important public issue. The study also reported that 52 percent of consumers aged 25 to 34 considered ethical shopping to be important (Mason, 2022).

Vietnam's long coast has a strong potential for supplying natural ingredients with sustainable harvests. Although marine-derived products are still uncommon in beauty and personal care products, there is significant ongoing research and development (Anake, 2004; Kalasariya, et al., 2021; López-Hortas, et al., 2021; Resende, et al., 2021). The Institute of Biotechnology has reported conditions are favorable for large scale use of four Vietnamese seaweed species in cosmetic masks that are free of synthetic preservatives (VAST News, 2019).

2.3. Related and Supporting Industries

The third set of determinants in Porter's Diamond Model are the Related and Supporting Industries. These industries can be either domestic or foreign, but typically consist of suppliers that provide inputs to the local industry.

Beauty care industry

The beauty care industry refers to the services offered by spas and salons, including manicures, pedicures, facials, haircare, bathes, and massages. The beauty care industry is an important partner for the beauty and personal care manufacturers as it builds interest in cosmetics products and educates consumers about their use.

Vietnam's beauty care industry has seen significant growth in recent years, driven by increasing purchasing power, growing younger populations, and the increasing influence of social media. However, it faces challenges. One of the biggest challenges is the lack of regulation and standardization in the industry. Inadequate governmental regulation and insufficient enforcement have led to a proliferation of unlicensed beauty salons and the prevalence of counterfeit products in the market (Mac, 2019; Quan, 2022). Unlicensed beauty salons can pose

a great risk to consumer health and safety (Tuoitrenews, 2013; VietNamNews, 2018; VnExpress, 2022). As long as the implementation of regulative laws remains unchanged, Vietnamese consumers will be skeptical about the efficacy of beauty practices and products, which will, in turn, hamper the growth opportunities for the beauty and personal care industry.

Lack of skilled workers is a challenge facing the beauty care industry, just as it is to the beauty product manufacturers and various other industries across Vietnam (VietNamNews, 2022). The lack of skilled labor is at both the management and operational levels. Entrepreneurs commonly lack the necessary managerial skills to effectively run their businesses. On the other hand, workers frequently lack the requisite experience and expertise to provide satisfactory services (Mac, 2019). The solution can be sought through the country's vocational education system. Minh (2015) argues that it is imperative for Vietnam to create a standardized national vocational qualification framework to regulate both the educational and vocational training systems.

The pharmaceutical industry

The pharmaceutical industry is important because of the growing popularity of personal care products in the category of cosmeceuticals.3 Cosmeceuticals commonly are intended for one of these effects: skin lightening or depigmenting, UV ray protection, moisturization, wrinkle smoothing, scar reduction, anti-oxidation (to prevent skin cell damage), hair growth stimulation, and hair texture or strength improvement.

Vietnam's pharmaceutical industry, like its personal care product industry, has a quickly growing domestic market dominated by foreign companies. The pharmaceutical market was estimated to be US$10 billion in 2020, which was double its 2015 size. However, half the market goes directly to imports (Nguyen & Samuel, 2022), primarily from the EU, USA, India, China, South Korea, and UK (ITC Market Analysis, 2023). The half that belongs to domestic manufacturers is primarily for generic drugs using imported raw materials (Angelino, 2017; Dezan Shira & Associates, 2020). Some of these generic drugs are exported but the value added in Vietnam is relatively small in comparison to the imported ingredients.4

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[3] The global anti-aging market was estimated to be US$ 62.3 billion in 2022 (Markets N Research, 2023).

[4] In 2021, Vietnam imported $US 4.2 billion in pharmaceutical products while it exported only $US 174 million. Exports go primarily to Japan, ASEAN countries, EU, South Korea, and USA.

While investment dollars are growing, Vietnam's pharmaceutical industry still faces four major obstacles to becoming a useful partner to the beauty and personal care product industry. First, Vietnam's lack of skilled workers is a "critical bottleneck" for the industry (KPMG, 2020, p. 13). Second, there are no specific plans to develop large-scale medicinal plant growing areas (Nguyen & Samuel, 2022), although several pharmaceutical manufacturers are successfully managing local herbal cultivation areas (Thuy, 2019). Third, the distribution network is "fragmented, inefficient, and suffers from poor transparency" (Nguyen & Samuel, 2022), although BuyMed's online platform thuocsi.vn has been credited with a view to improving the supply chain in rural areas (Duc, 2023; Shu, 2020). Fourth, bribery distorts the availability and price of medicine. Nguyen, et al., (2017) found that 40% to 60% of the price of generic medicines in Vietnam was typically spent on persuading doctors to prescribe and hospitals to order the medicines.

Distribution industry

The distribution industry plays a pivotal role for the personal care product industry as it facilitates the delivery of products to reach consumers. By providing a reliable distribution chain connecting retailers, wholesalers, and consumers, the distribution industry secures channels for the cosmetic industry.

In Vietnam, traditional distribution channels such as cosmetic stores, supermarkets, hypermarkets, and convenience stores are still the dominant players in terms of distribution, accounting for 86 percent of distribution in 2020 (Euromonitor, 2021). The beauty salons and spas are important distribution channels in Vietnam as well, as they introduce consumers to new cosmetic products and trends by offering demonstrations and consultations. This rather disproportionate distribution of cosmetic products has led to a concentration of beauty product sales in urban areas, with rural areas underserved.

There are some positive signs of change in the industry, with the emergence of e-commerce platforms such as Shopee, Lazada, and Tiki, which are helping to improve the availability and accessibility of beauty products in Vietnam. The emergence of e-commerce platforms has revolutionized the cosmetic distribution industry in Vietnam, providing a new channel for local and international brands to reach consumers (Euromonitor, 2021).

There are some challenges that the cosmetic distribution industry in Vietnam faces. The first is the limited infrastructure for logistics and transportation. The country's geography is vertically stretched and thus segregated, centering on two big cities. Poor transportation networks make it difficult to distribute products quickly and efficiently to all parts of the country.

The second obstacle Vietnam's cosmetic distribution industry is facing is that the counterfeit cosmetic products are flooding in the domestic market. Legitimate manufacturers and distributors are forced to curtail their prices to compete against the fake products (Dtinews, 2012). Counterfeit cosmetics are in poor quality and often unsafe. This does not only pose a significant threat to public health but also to market confidence, especially for the online market (Nguyen, Hoa & Nguyen, 2021).

A third challenge is the lack of regulations and weak enforcement of regulations for cosmetic products, which only exacerbates the counterfeit problem. The Vietnam Ministry of Health has issued guidelines and regulations for cosmetic products, Circular 06/2011/TT-BYT, but the enforcement of these regulations is still weak (Vietnamnet News, 2017). The Vietnamese government's role in conducting regular inspections and enforcing the regulations is required to identify, thus outroot, the prevalence of counterfeit or unsafe cosmetic products in the market.

Packaging

Two kinds of packaging are important in the industry. First is the packaging that seals and protects the product. This is especially important for many green cosmetic products because they lack strong preservatives and effective air seals are part of keeping a product's proper smell, color and texture. Second is the aesthetic packaging, which conveys to the consumer the qualities of the product that will make it an appealing purchase.

Not long ago, Vietnam lacked a good packaging industry to support domestic products that wanted an upscale, modern, scientific image. Christie Ho, co-founder of Skinna cosmetics complained that when the company started in 2013, quality cosmetic packaging was rare, with mostly Chinese packaging available which did not meet preservation requirements for Skinna's natural cosmetics (quoted in DoanhNhan Saigon Online, 2016).

Packaging and the product design is one of the most important factors that influence consumers' purchase intention in Vietnam (Le et al., 2020). To capture consumers' attention, Vietnam's cosmetic industry is incorporating a range of features into the design of cosmetic containers in terms of the shape, color, material, and artistic looks of the containers to achieve a unique and distinctive appearance.

2.4. Firm Strategy, Structure, and Rivalry

The fourth set of determinants in Porter's Diamond Model are the firm Strategy, Structure, and Rivalry. This refers to the competitiveness of a country's

firms and the environment in which they operate. This includes the firms' abilities to adapt to changing markets and customer needs, as well as their ability to form strategic partnerships and alliances.

International trade

Since the launch of Đổi Mới reforms in 1986, Vietnam has gradually reduced the import tariffs on commodities. In 1995, Vietnam joined the Association of Southeast Asian Nations (ASEAN) free-trade block. ASEAN currently has nine other members: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, and Thailand. In 2007, Vietnam joined the World Trade Organization. Vietnam has 18 active free trade agreements with more than 50 partner countries in the world. Based on the trade openness calculated by the World Bank, Vietnam has the second highest trade openness among the ASEAN countries, after Singapore.[5]

The *Agreement on the ASEAN Harmonized Cosmetics Regulatory Scheme* was signed in 2003. This created the ASEAN Cosmetic Directive (ACD), a regulatory regime consistent across the ten ASEAN countries. The ACD was designed to parallel the EU's Cosmetic Product Directive (Dir. 76/768/EEC). The two stated purposes of the ACD are "ensuring the safety, quality and claimed benefits of all cosmetic products marketed in ASEAN" and to "eliminate restrictions to trade of cosmetic products amongst member states." An additional unstated purpose is to ease export of ASEAN-produced cosmetic products to the European Union (Nottage, 2019). Because the EU's Cosmetic Product Directive is considered the gold standard for cosmetics,[6] compliant products are welcome in most countries after satisfying local import procedures.

Besides the ACD, some of Vietnam's free-trade agreements have provisions specific to cosmetics, including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); the European Union-Vietnam Free Trade Agreement (EU-Vietnam FTA); the Korea-Vietnam Free Trade Agreement (KVFTA); and the ASEAN-Australia-New Zealand Free Trade Agreement (AANZFTA).

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[5] The openness index adds imports and exports in goods and services and divides this sum by GDP. The higher the ratio, the more the country is engaged with international trade.

[6] For comparison, the EU bans more than 1,400 chemicals from cosmetics while the USA bans less than 20 chemicals (Ferreira, et al., 2022). The philosophical difference between the EU/ASEAN and USA approach is that the USA's Cosmetic Ingredient Review is a nonprofit industry-sponsored board which relies on voluntary cooperation. Liability law is the primary guarantee of safety. The US cosmetic industry defends this system as equally effective (e.g., Landen, 2022), however, some critics disagree (e.g., New Your Times Editorial Board, 2019)

Highly competitive market by foreign dominance

The Vietnamese market prioritizes several established foreign cosmetic brands. Among foreign cosmetics companies, Korean brands have gained significant popularity due to their good quality, relatively reasonable prices, and marketing strategies in line with popularity of Korean pop culture (Le et al., 2020). Since the signing of the South Korea-Vietnam FTA in 2015, the tariffs between Korea and Vietnam have been lowered to 0–5%, making it even more favorable for Vietnamese consumers to access South Korean cosmetic products.

Japanese cosmetics are especially known for their suitability for the majority of Vietnamese women's skin types. Japanese skincare products such as lip balms, face masks, and cleansers are widely used in Vietnam. Brands from the UK, France, and Germany hold significant stature for their product quality and are preferred by Vietnamese customers who look for high-end cosmetics.

Green firm strategies

A nascent green cosmetic industry segment has begun tapping the abundance of natural ingredients such as essential oils, coconut, aloe vera, jasmine, and lemongrass, which are found in Vietnam (Nguyen, Nguyen, & Vo, 2019, TNC ASIA Trend Lab, 2021). This phenomenon has intensified over the last couple of years as information about cosmetic products that contain toxic chemicals and contaminants is spread both through traditional media channels and on social media (Vietnam Insider, 2019).

Major importers like L'Oreal and Nivea have introduced environmentally friendly and natural products (Pham, 2022). Because most Vietnamese consumers are sensitive to price (Nguyen et al., 2021), to be competitive, Vietnamese brands must utilize natural, organic, and green ingredients without doing damage to the environment and be more affordable than the imported green products.

Vietnamese start-up brands that are pioneering this niche include:

- Cocoon is a natural and vegan cosmetic brand name used by the Nature Story Cosmetic Co., Ltd – Vietnam since 2013. Cocoon advertises its approval from the Cruelty Free International Leaping Bunny programme and PETA, the animal rights organization. It registers its products with The Vegan Society.
- Cỏ Mềm (Soft Grass) Homelab is an herbal cosmetic brand founded in 2015. Its marketing highlights several factors: transparency with all its products' ingredients, origins, uses, and safety ratios available on its website; its use of Vietnamese-origin natural ingredients; its cGMP-standard production facility; and its founding by a female pharmacist.

- Naunau is a vegan cosmetic brand marketing its products as being appropriate for Vietnam's environment and for a Vietnamese person's skin. Naunau's fragrances are created from both domestic and imported materials with an exotic flair, including Turkish rose, Provence lavender, Japanese green tea, and Ghanaian shea butter. The company established NauNau Garden in Da Lat to study and source ingredients, with a side project for tourism.
- Skinna was founded in 2013 by a couple who turned a cosmetic-making hobby into a business. Skinna positions itself as an expert in ancient beauty tips and aligning the brand story with Hue royalty lineage. Its products are based on organic ingredients, and most have a traditional medical use.
- Thorakao was founded in 1961 and is now is part of Lan Hao Cosmetics. Its products use natural ingredients such as curcumin, grapefruit flower, and aloe vera. The brand was popular in the 1990s but lost market share when foreign competitors arrived. Its customers are now typically older and rural women.

Research and Development

R&D is becoming increasingly important in the beauty and personal care industry in Vietnam as consumers are becoming more aware of the products they use, and potential risks posed by synthetic chemicals ingredients (Euromonitor, 2021). Cosmetic companies are striving to develop innovative products that cater to the specific needs and preferences of Vietnamese consumers.

One aspect that is missing in the Vietnamese cosmetic and personal care product industry a collaboration between Vietnamese firms' R&D strategies and academic institutions. Currently, there are no higher education institutions in Vietnam focused on cosmetic engineering. Vietnam needs a skilled workforce and industrial research capacity. To this end, the South Korean Ministry of Education has recently granted funds to establish a Department of Cosmetic Engineering at Ho Chi Minh City University of Technology, which would be Vietnam's first cosmetic engineering department (Ho Chi Minh City University of Technology, 2022).

3. Conclusion

3.1. Summary of Findings

In the context of Porter's Diamond Model, Vietnam's prospects for success as a producer of green beauty and personal care products are mixed.

Factor Endowments: Vietnam has the natural resources to enable the production of green beauty and personal care products. However, large scale growing or harvesting operations are lacking. Vietnam has a large, young, inexpensive labor pool. However, it is lacking in the science and business skills needed to advance the industry.

Demand Conditions: Vietnam has a growing domestic market for beauty and personal care products. Interest in green products is increasing. The challenge is that Vietnamese consumers prefer foreign brands which already dominate the market. Because of participation in ASEAN and free-trade agreements, Vietnam cannot protect its domestic market with import tariffs. The Vietnamese brands must compete on price while simultaneously challenging quality preconceptions.

Related and Supporting Industries: The beauty care, pharmaceuticals, distribution, and packaging industries are all developing quickly and can be useful partners to the beauty and personal care product industry. However, they are all facing the same challenges in finding skilled labor. Thus, they are also major competitors in the labor market.

Strategy, Structure, and Rivalry: There is a nascent industry in green beauty and personal care products. If the domestic market can be won, there is good potential for international success because domestic standards are compatible with EU standards and free trade agreements will allow access to many foreign markets.

A major issue identified in the beauty and personal care industry, and in related industries, is the lack of a skilled workforce. This suggests that the HCMUT Cosmetic Engineering project has good potential to improve Vietnam's competitive situation. With the first cosmetic engineering graduates entering the market within the next five years and a strong collaboration with the local green cosmetic industry, the potential is strong to attract investment and build market share.

This article is the first attempt to assess Vietnam's potential as a producer of green beauty and personal care products. Several avenues of further research would be helpful. First, more information is needed on sustainable practices in harvesting ingredients in tropical environments. One example for such development may be Brazil's Beraca, a manufacturer of natural ingredients extracted from the Amazon rainforest. Second, the International Federation of Societies of Cosmetic Chemists lists 28 colleges and universities that award academic degrees in cosmetic chemistry. Beyond supplying an educated workforce, the economic development impact of these universities on the local cosmetic industry is not well understood. Third, approximately 5 million Vietnamese live overseas.

About 2 million are in the United States where many are engaged in the nail salon business. It is unclear if they would be receptive to using and marketing Vietnamese green beauty and personal care products.

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Chapter 4

Correlation Between Transactional Relationships and Technological Integration

Camillo Manlio Giovanni Manera, Giovanni Luigi Manera

1. Introduction

One of the B2B's exchanged values is the relationship, the invisible link connecting companies. Within the existing applicable customer/portfolio relationship management models, the one of Malcolm McDonald which defines the relationship levels in B2B and the dynamics that occur in the different levels, offers a very profound interpretation tool. Mc Donald's model, in fact, makes it possible to measure the relationship that exists between organizations and offers a "lens" through which to see the organizational dynamics that are activated, depending on the level of the relationship. For example, with a high relationship, it is common for stakeholders to have frequent dialogues, holding in-person meetings or even opening offices in the customer's offices. Although technologies to support business processes are increasingly present in the SME world, as said above, human interaction remains crucial in high relationships. What is not clear is whether, when the relationship is very low, the lower contacts between organizations are instead mediated partially or totally through technologies such as eCommerce, drastically reducing human touch points. To meet the research main goal, the following partial goals have been set:

- Identification of the components of the relationships developed by SMEs in B2B (e.g., sensitive information sharing, long-term plans, co-marketing and so on).
- Selection of a model to calculate and determine the relationships (McDonald's Model).
- Detection of the communication processes.

Description of the possible correlation between the relationship level and communication process to identify the correlation between technological mediation to support relationship and the level of relationship, the following

hypotheses has been set: "the lower the level of relationship, the lower the interaction between people since interactions are mediated almost entirely by technologies". The empirical analysis has been run with the data collected from the ERP and the CRM of the of the sampled SME, involving 18 of its customers (the most important ones by Paretian class). Using the tool of the surveys, salespeople such as consultants, area managers, business developers, CEOs and professionals who must manage the relationship daily have been asked to provide responses aimed at measuring the relationships and understanding the communication process, whether it is mediated by humans or technologies.

2. Relationship in Literature

Relationships and their development are widely discussed in the literature since in today's economy, they are key to competitive advantage development. They are companies 'intangible assets that, when well manged, can generate important value for the companies' (Madhani, 2009). The relationship in B2B can be defined as the sum of the activities carried out by a company with its stakeholders and – first – the customers (main stakeholders) and the customer's experience in terms of the results he perceives. The authors also presented different descriptions and classifications of the relationships, depending on the context in which they are observed. For example, F. Buttle listed the existence of three main relationships achievable in the context of Relational Marketing (Buttle, 1996), E. Gummesson describes the existence of 30 different relationships in the market (Gummesson, 2008), and so on. Here is the classification made by Malcolm McDonald & Diana Woodburn by which the relationships with existing customers can be hierarchically segmented to four different levels (McDonald & Woodburn, 2007, p. 57) as shown in Figure 4.1.

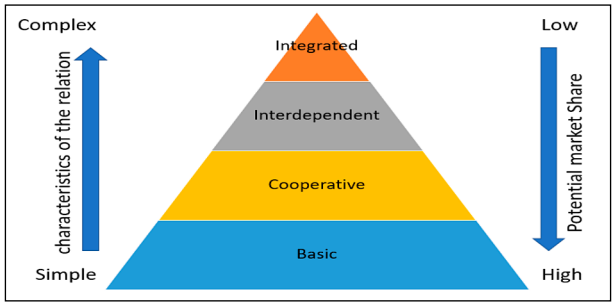

Figure 4.1. Hierarchical pyramid of relationships by degree of complexity and potential
Source: based on McDonald, M. & Woodburn, D., "Key Account Management", pg. 58.

The pyramid shape in Figure 4.1 is a recurrent graphic result of a company's customer portfolio segmentation by relationship levels. At the bottom, there is the basic relationship that is the weakest, and on the top, there are the highest relationships.

3. Customer Segmentation by Relationship Level Market and the Management Model Description

The weakest and easiest relationships are named Basic Relationships, while the deeper the relationship is, the more specific events happen between the parties and the more complex the relationship is. As anticipated, different features of the relationship characterize each level of relationship.

3.1. Basic Relationships

The Basic Relationships (BS) correspond to the most common sales relationships. They are activated when the companies involved emphasize the product transaction, logistics and all economic conditions related to technical dimensions (McDonald & Woodburn, 2007, p. 64) of the product or service.

By following M. McDonald and D. Woodburn's definition of BSs, it is possible to summarize some main features that characterize these kinds of relationships (McDonald & Woodburn, 2007, pp. 64–67):

- Focus on transaction and therefore on efficiency and effectiveness.
- The convenience of the purchase is measured in relation to the product/service's price.
- Whether the products/services required are not niche products, the customer purchases the same products and services from several different suppliers, often alternating them.
- The customer can easily replace the supplier if any technical attribute of the offering is not convenient anymore.[1]
- Only the purchasing department and the sales often represent the channel of communication between the companies. The point of contact is unique, and it does not involve more corporate functions.
- The relationship is strictly limited to issues related to the product flow.
- Companies place trust on the product rather than on the contacts involved in the exchanges.

[1] The customer may easily choose another supplier in cases such as a higher price than that offered by other suppliers, less efficiency in delivery (timing, quantity etc.), reduction of quality, and so on. The customer's purchasing criteria are clear (unhidden): if the supplier's price is higher than other suppliers 'price, the customer will change supplier.

- There is no need for information exchange.
- BSs are reactive rather than proactive: companies are limited to respond to the customer's requests rather than propose solutions.
- Almost no existence of customization of the service/product offered, except for some cases of high volume of productivity.
- BSs are the less costly organizational relationships.

When BSs are activated, companies adopt a precise organizational structure that is a natural outcome of the intrinsic characteristics of these kinds of relationships, as shown in Figure 4.2.

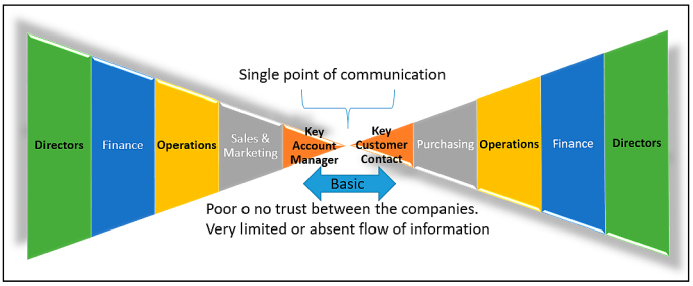

Figure 4.2. Organizational structure of companies activating Basic Relationship
Source: retrieved on McDonald, M. & Woodburn, D., "Key Account Management", p. 55.

As shown in Figure 4.2, the communication between companies is limited and involves only the functions set up to sufficiently manage the transactions. More functions involved may mean less efficiency in the relationship and they may have a negative impact on the relationship itself.

3.2. Cooperative Relationship

The Cooperative Relationship (CR) is on a higher stage of the pyramid than BR. The CR is activated when the key account manager (KAM) and the customer's manager are working closely and with greater intensity than in BR. The greater intensity causes a natural improving of the exchange of information between the people involved, so that they can start to operate with joint activity plans, often involving different company functions/departments (McDonald & Woodburn, 2007, p. 67). Even for CRs, companies adopt a precise organizational structure that is a natural outcome of the intrinsic characteristics of this sort of relationship (Figure 4.3).

As shown in Figure 4.3, the number of connections increases however only on a discrete basis for each opportunity. By following M. McDonald and D. Woodburn's definition of CRs, it is possible to point out some main features that characterize these kinds of relationships:

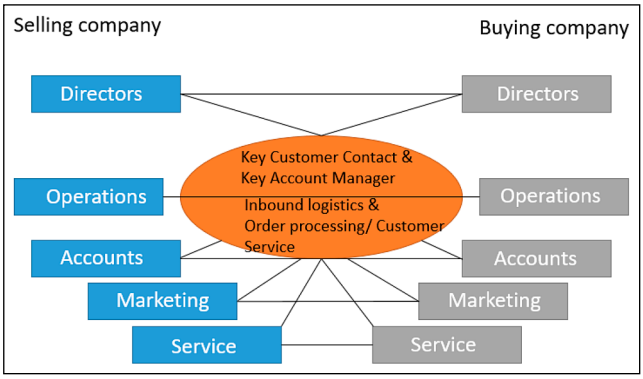

Figure 4.3. Organizational structure of companies activating cooperative relationship
Source: retrieved on McDonald, M. & Woodburn, D., "Key Account Management", pg. 68.

- The supplier understands and pays attention to the relationship that exists with the customer.
- Although there might be more than one supplier in the customer's supplier portfolio for the specific product/service, the one who was involved in the CR can be the favorite.
- Despite the relationship getting deeper, the customer has the possibility to replace the supplier by planning its exit.
- The network of contacts and the flow of information both involve different functions at different companies 'levels.
- The physical visits from the client and the communications are still discrete over time, with moments of peaks during the business opportunities.
- Although still very limited, the information shared between the parties increases compared to the BRs.
- Customers still focus on intrinsic technical characteristics of the products/services however, they can ask the suppliers to join some strategic activities, which are the natural result of a short/medium-term co-planning (McDonald & Woodburn, 2007, pp. 68–69).

3.3. Interdependent Relationship

The Interdependent Relationship (IR) is activated when the parties decide to adapt and – consequently – transform their organizations, for a mutual collaboration to achieve shared strategic goals (McDonald & Woodburn, 2007, pp. 71–72). The intensity of the parties' interactions grows in parallel to the customer's needs. The product/service provided by the supplier starts to be an *ad hoc* solution for customer (McDonald & Woodburn, 2007, pp. 70–73) (Treacy

& Wiersema, 1995, p. chapter on Customer Intimacy)[2] and, consequently, the customer is pushed to shape their own organization to support the supplier (McDonald & Woodburn, 2007, p. 72). Even for IRs, companies adopt a precise organizational structure that is a natural outcome of the intrinsic characteristics of these kinds of relationships (Figure 4.4).

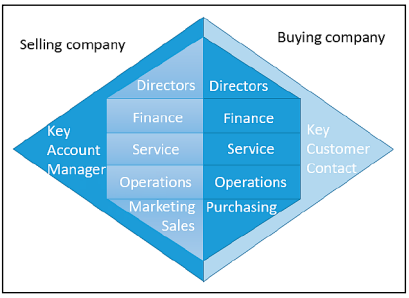

Figure 4.4. Interdependent organizational structure of buyer and seller companies
Source: retrieved from McDonald, M. & Woodburn, D., "Key Account Management", pg. 72.

By following M. McDonald and D. Woodburn's IR's definition, it is possible to summarize some main features that characterize these kinds of relationships:

- A mutual recognition of importance exists between the companies.
- There is the necessary presence of a single supplier for the given product/service. If any customer's policy obliges a greater number of suppliers for the determined product/service, the customer shares the most strategic and remunerative activities with the supplier who activates this relationship.
- Any replacement of the supplier would create considerable strategic issues to the customer.
- The number of functions involved in strategic and joint activities increases. The strategic co-planning and sharing of objectives increases too in order to co-create value in the market.

[2] The Authors affirms that companies that pursue the discipline of Customer Intimacy [CI] adapt their own organization to the customers. Basically, the idea of the business model of the companies pursuing CI is in adapting to the customer's business model. In order to achieve a higher level of adaptation, it is necessary that the supplying company understands very well the customer's business model. Therefore, companies pursuing CI tend to increase the volume of exchanges of information with the customer, to work with a high level of trust, to medium and long term plans and so on. Interdependent Relationships' features are a perfect strategic tool for companies pursuing the CI discipline. As shown in the relationship's pyramid, these relationships are naturally activated with a lower customers' market share than the previous stages. The authors quote as an example of a well pursued CI discipline the IBM business model in the 70s and 80s. IBM was delivering a "total solution" offering system by training its customers' staff, co-planning business applications and so on [p. 126]).

- People involved accomplish extra working activities with more frequency.
- A deeper knowledge between supplier and customer is developed and consolidated over time.
- There is a continuous exchange of sensitive information and dialogue between the various functions.
- The supplier company is rather proactive in the co-creation of value than reactive.
- Both companies are ready to invest in their relationship.

The growth of trust is a component of this kind of relationship. In fact, the trust allows the flow of information and tactical materials between companies, and the increasing interdependence between all the functions is involved. Thanks to the trust shared between the parties, each business opportunity which is normally very expensive in the B2B market, does not require long negotiations, long time hangings, deep and difficult internal approval processes and so on (McDonald & Woodburn, 2007, p. 75). Because of all the features listed, the price is not the main variable as in the BRs, but it is just one of the agreed variables and normally it is stable over time (McDonald & Woodburn, 2007, p. 74).

3.4. Integrated Relationships

The Integrated Relationship (IGR) happens when the parties involved operate toward the business as one unique entity (McDonald & Woodburn, 2007, pp. 76–77) (Snehota, Fiocca, & Tunisini, 2009, p. 37). The people involved behave as if they belonged to the same company and it is difficult to understand which company they really belong to (McDonald & Woodburn, 2007, p. 77), as shown in Figure 4.5.

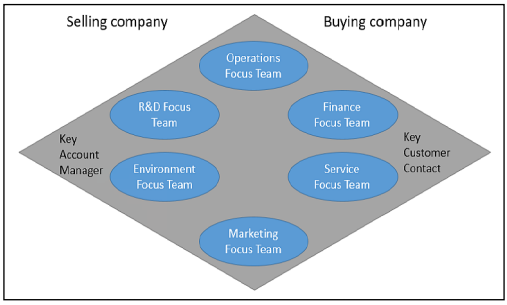

Figure 4.5. Integrated teams activating integrated relationship

Source: Retrieved from McDonald, M. & Woodburn, D., "Key Account Management", p. 76.

Figure 4.5 shows how the companies merge their functions to achieve common goals when the IGR is activated. Supplier's replacement would be potentially dramatic for both businesses, due to the elimination of the boundaries

between the companies, the complete sharing of strategies and the coordination of resources for a common objective (McDonald & Woodburn, 2007, p. 77). The data collection and elaboration technologies are often shared, allowing the people involved to run strategic analysis together and allow companies to co-create value in the market (Peppers & Rogers, 2007, pp. 108–109)[3]. The sharing of strategic information and transparency both imply that companies develop together a single business plan (McDonald & Woodburn, 2007, p. 78). By following M. McDonald and D. Woodburn's definition of IGRs, it is possible to summarize some main features that characterize these kinds of relationships:

- The companies are mutually dependent, complementary and they establish a deep and long partnership.
- The customer purchases the specific product/service by just one supplier, and it does not have back-up suppliers.
- Any replacement of the supplier would dramatically affect the strategy of the customer.
- Teams of both customer and supplier are integrated and set up to achieve shared strategic objectives.
- Parties share strategic information and technological tools to collect data and measure them.
- There is total cost transparency between the parties.
- Companies plan in the long-term (or develop long-term plans) and invest their resources together.
- Companies achieve higher profits working together.
- Major joint investments are also possible in infrastructures.

A very strong mutual trust allows the total integration of skills between two companies in all the areas involved. The more the relationship grows and evolves towards the total integration, the more total trust is needed. The trust allows the total sharing of information and tools, greatly reducing the conflict and the negotiation, having a very positive impact on margins.

4. SMEs' Technological Landscape to Support Sales/Purchase Processes in B2B

The Information Technology (IT) adoption in business is aimed at enhancing connections between all the stakeholders and at improving efficiency. Especially

[3] The Authors explain that to achieve a deep level of relationship, the parties need much information related to each other. However, in order to have information, they need to highly trust each other by sharing sensitive data and so on. Technologies allow companies to share and transform data in joint strategic business analysis.

in B2B, companies adopted IT particularly for enhancing connection and networking with other companies (Buduchi, Trust, power and transaction costs in B2B exchanges – a socio-economic approach, 2008). During the last decades, the business world scenario systematically experienced great changes due to the speed of the release of IT technologies to support companies in their strategy, in making important decisions and, possibly, in automating more or less simple tasks, indeed (Nikoloski, 2014). These technologies adopted by the companies perform greatly when strictly related to the company's vision with the objective of concurring in improving the company's business performance in an objectively measurable manner (Albertin & de Moura, 2004). The rising of this new complexity in the market involved great changes of the architecture of the enterprises. The enterprise architecture is defined by Marc M. Lankhorst as "*a coherent whole of principles, methods, and models that are used in the design and realization of an enterprise's organizational structure, business processes, information systems, and infrastructure*" (Lankhorst, 2005). The fundamental part of the architectures are the companies' technologies that can be defined as Information and Communication Technologies (ICT), aimed at generating valuable information from the data retrieved by the companies and processing them, supporting the companies' internal processes and their strategies on the market. Nana Yaw Asabere and Samuel Edusah Enguah define ICT as "*the tools, facilities, processes, and equipment that provide the required environment with the physical infrastructure and the services for the generation, transmission, processing, storing and disseminating of information in all forms including voice, text, data, graphics and video*" (Asabere & Enguah, 2012). The ability of a company to achieve its goals in a highly technology-supported manner constitutes the degree of technological maturity. Indeed, maturity can be defined as a particular status of the enterprise that reflects the enterprise's ability to achieve determined goals established (Proença & Borbinha, 2016). Companies might have a different level of maturity, as shown in Figure 4.6.

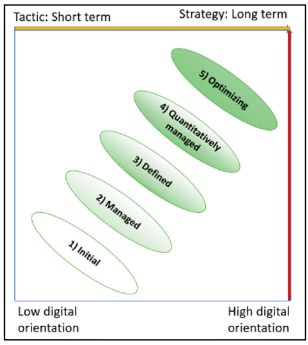

Figure 4.6. IT Maturity Levels

Source: M., M., Lankhorst, "Enterprise Architecture at Work: Modelling, Communication and Analysis", 2005, p. 21.

In Figure 4.6, the highest level of maturity corresponds to IT-oriented companies, which means digital oriented ones, where a digital oriented company can be defined as a company that includes ICTs as a core asset in its internal and external strategy, in order to get advantages in respect to its competitors (Casadesus-Masanell & Ricart, 2009). Companies that do not adopt ICTs are at the lowest level, and moving up the hierarchical ladder, companies are increasingly supported by technology, which is used to automate certain processes and/or support humans. In the ICT architecture of organizations, it is very important and frequently used (Al Bakri, Cater-Steel, & Soar, 2010) to promote self-service and automate the purchasing process of certain products and to use B2B eCommerce. Among the various eCommerce, business-to-business, business-to-consumer and consumer-to-consumer applications, the former is the most applied in the world. In 2015, B2B eCommerce generated $14 trillion globally (Vajjhala & Thandekkattu, 2017) while in 2027, B2B eCommerce is expected to generate $18,77 trillion globally (Beg, 2022). B2B eCommerce, therefore, is a portal that serves a strategic purpose for businesses. By automating the sales process and promoting self-service, the effort of suppliers can be greatly reduced by enabling the customer to purchase through the portal.

5. Research Methodology

As defined in the literature, a specific company organizational structure must correspond to each level of relationship. Using Mc Donald's model, it is possible, therefore, to measure the level of relationship that exists between the SMEs and how the organize themselves. Through the survey tool, therefore, relationships and the communication process will be measured. It will be helpful to specify partial goals of the study, presented in Table 4.1.

Table 4.1. Partial goals of the research

No.	Partial goal of the research
1	Identification of the components of the relationships developed by SMEs in B2B (e.g. *Sensitive information sharing*, *Long-term plans*, *co-marketing* and so on).
2	Selection of a model to calculate and determine the relationships (*McDonald's Model*).
3	Detection of the use of technologies
4	Description of the possible correlation between relationship level and the level of technologies use

Source: own elaboration.

For the B2B market, regardless to the industries, the following hypothesis has been formulated: "the lower the level of relationship, the lower the interaction between people, since, interactions, are mediated almost entirely by technologies".

5.1. Sample Selection

To develop the model, data originating from surveys, ERP and CRM related to the customer portfolio composed of 18 firms from a sample of an Italian SME has been collected and analyzed. The sample has been chosen by using the convenience method of sampling companies in it as follows:

- Company belongs to the SMEs group.
- SME is well established in the market; it operates for more than 15 years on it.
- SME owns in its customer portfolio both types of customers: End User (companies that buy to ultimately use the product or service) and Sales Channel (companies that buy and resell the products/services again).
- SME is geographically located in Italy.
- The SME customers for whom the relationship is measured are the top 18 customers by Paretian class.

The sampled company is listed in Table 4.2 with its main characteristics.

Table 4.2. List of sampled companies

Characteristics/ List of Italian SMEs	No. Employee	Revenue	Years in the market	Industry	No. of companies in portfolio analyzed
Company A	15	7 millions	32	Supply of packing and packaging materials and machinery	18

Source: own elaboration.

5.2. Research Surveys

To test the hypothesis, two survey have been submitted to the Account Manager, Area Manager, Sales Director, or any professional who manages the business relationship with the company about which he/she is asked to answer the questions. Participants have been chosen because they have knowledge of all the activities that happened with their customers, including after sales and customer care activities.

Survey 1: When participant's answers are positive, the relationship level (RL) measured will be the highest (Integrated relationship), while, on the contrary, when their answers are negative, the RL measured will be the lowest (Basic relationship).

Survey 2: When participants' answers are positive, the communication process (CP) is mainly mediated by technologies, while, on the contrary, when their answers are negative, the CP is mainly or totally mediated by humans.

The scale used is the McDonald's model scale (McDonald & Woodburn, 2007, pp. 62,68) as shown Table 4.3.

Table 4.3. Relationship scores

Average Score	Relationship Stage for the High Relationship Measurement
>= 1, <= 1,67	Basic
> 1,67 <= 2,67	Cooperative
> 2,67 <= 3,67	Interdependent
> 3,67	Integrated

Source: based on McDonald model.

The statements have been customized in the survey to be contextualized in the respondents' daily operations as described in the following Table 4.4.

Table 4.4. Survey's statements and Mc Donald's indicators measured

Id	Statements	Relationship dynamic as reported in Mc Donald's model	Score
S1	Breaking up the relationship would be hard and traumatic for both business parties	Barrier to exit relationship (Relationship's strength)	from 1 (Totally Disagree) to 3 (Totally Agree)
S2	We and the client provided stable cross-functional people to build and implement an offering tailored to the client's specific needs	Existence of company's and supplier's cross functional merged teams, co-working and sharing objectives.	from 1 (Totally Disagree) to 3 (Totally Agree)
S3	Managers from both companies are often in touch, even every day, depending on the project	Existence of multi-level communication between the parties	from 1 (Totally Disagree) to 3 (Totally Agree)
S4	Trust drives relationships: you collaborate, interactions are simplified, and problems are jointly solved	Deep trust between the parties that allows sensitive information sharing and spirit of partnership	from 1 (Totally Disagree) to 3 (Totally Agree)
S5	We have multi-year joint activities for products and processes innovation, to become both more competitive and improve profits	Existence of a deep partnership that allows joint long-term strategic plans. There is no opportunistic behavior, and this approach is an antecedent of better both parties 'profits.	from 1 (Totally Disagree) to 3 (Totally Agree)
S6	We share strategic information and data transparently	Deep trust between the parties that allows sensitive information. There is transparency in the cost system.	from 1 (Totally Disagree) to 3 (Totally Agree)
S7	We are the sole or preferred supplier, and the customer margin is more satisfactory than the average	Supplier is unique for the customer and considered the main hardly replaceable one. Both parties recognize the importance of the other.	from 1 (Totally Disagree) to 3 (Totally Agree)

Source: own elaboration based on Mc Donald's model and relationships features.

To detect weather the customers 'communication is mostly mediated by human interactions or not, a survey has been delivered. The scale used to understand the communication processes is defined the Table 4.5.

Table 4.5. Score regarding the communication process

Sum of the Score	Colour of the sphere in chart	Communication process in place
= 9	Green	Customer frequently fully supported by both BackOffice sales force and dedicated Accounts.
> 3, >= 8	Yellow	Customer has free assisted service, through which much of the processes are automated, but human interaction remains.
= 3	Red	Customer has completely free service, processes are fully automated, promoted 100% self-service.

Source: own elaboration.

Statements are reported in Table 4.6.

Table 4.6. Survey's statements to measure level of human interaction in processes

Id	Ways through which the customer most frequently activates communication with the company	Score	
Q1	Customer Care access via phone for resolving needs that cannot be resolved with Bots	4 = More frequent 1 = Less frequent	4 = No use of technological automation, use of human interaction 1 = Use of technological automation, no/low use of human interaction
Q2	Access to an Internal Account with a confidential toll-free number	4 = More frequent 1 = Less frequent	4 = No use of technological automation, use of human interaction 1 = Use of technological automation, no/low use of human interaction
Q3	Access to external dedicated account with visits to the customer's site	4 = More frequent 1 = Less frequent	4 = No use of technological automation, use of human interaction 1 = Use of technological automation, no/low use of human interaction

Source: own elaboration.

6. Analysis of results

6.1. Company A – Relationship measurement and analysis

Company A is a wholesaler and manufacturer of materials such as plastic and cardboard for packaging. These materials are mainly used at the end of the production line to package goods that customer companies pour into their finished goods warehouses. The materials are consumed by customers either in a continuous flow or depending on the occasions and items to be packed. Among the continuous-flow materials, packaging films, sold by the roll, account for 50 percent of sales volumes and are sold by weight. There are many types of these films depending on height, degree of strength, use for food or other uses, etc. The remaining materials are sold either in rolls, such as bubble wrap, or in pieces, such as, for example, plastic boxes. Company A responses are listed in Table 4.7 below:

Table 4.7. Resume of the survey result

Customers	Account who responded	Average of score of relationship measurement	Relationship Measured	Sum of score of communication process measurement	Color
1	Sales Area Manager 1	1,57	Basic	5	Yellow
2	Sales Area Manager 2	1,57	Basic	3	Red
3	Sales Area Manager 1	1,86	Cooperative	5	Yellow
4	Sales Area Manager 2	1,57	Basic	5	Yellow
5	Sales Area Manager 1	1,43	Basic	3	Red
6	Sales Area Manager 2	1,29	Basic	3	Red
7	Sales Area Manager 1	1,29	Basic	3	Red
8	Sales Area Manager 2	1,57	Basic	4	Yellow
9	Sales Area Manager 2	1,43	Basic	5	Yellow
10	Sales Area Manager 2	1,86	Cooperative	4	Yellow
11	Sales Area Manager 1	2,71	Interdependent	9	Green
12	Sales Area Manager 2	1,43	Basic	5	Yellow
13	Sales Area Manager 2	1,71	Cooperative	3	Red
14	Key Account 1	2,86	Interdependent	9	Green
15	Key Account 2	2,71	Interdependent	9	Green
16	Sales Area Manager 2	1,71	Cooperative	3	Red
17	Sales Area Manager 1	1,29	Basic	3	Red
18	Key Account 3	3,00	Interdependent	9	Yellow

Source: own elaboration.

The Table 4.7 shows the aggregate results of the two surveys, to which the following responded: Sales Area Manager 1, Sales Area Manager 2, Key Account 1, Key Account 2 and Key Account 3, i.e., those responsible for commercial customer management (18). Below, in Figure 4.7, the graphical representation of the survey measurements is presented.

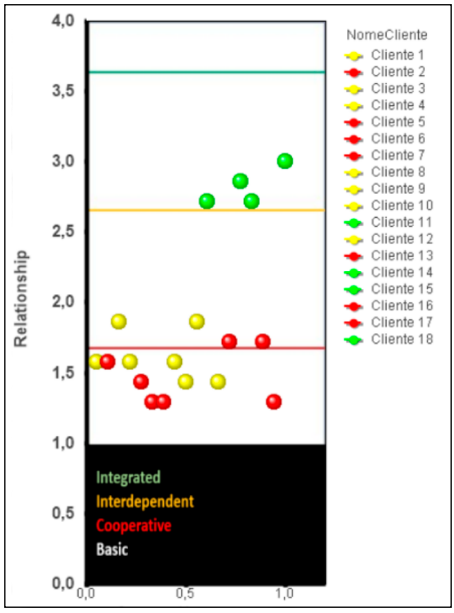

Figure 4.7. Company A Relationship Measurement and Communication Processes with 18 Customers
Source: own elaboration based on Mc Donald's model.

The Figure 4.7 shows immediately an interesting phenomenon, the top 18 customers by Company A's turnover, share mainly the basic and cooperative relationships, while only Customers 11, 14, 15, 18 share an interdependent relationship. Therefore, a first observation points out that although all customers are in Pareto class A, the relationships change. This confirms McDonald's model, which explains this phenomenon well by not, in fact, relating turnover back to relationship. The second obvious phenomenon to emerge from the analysis conducted is that Customers 11, 14, 15, 18 who share an interdependent relationship with Company A, are also frequently fully supported by both BackOffice sales force and dedicated Accounts of Company A. Instead, the clients who share the two lowest ratios are, scatteredly, free service assisted, having much of the processes related to the communication with Company A automated, with few human interactions or completely free service, having all the processes fully automated, with Company A promoting 100% of self-service with them. Apparently, then,

there seems to be a correlation between the relationship level and communications processes, i.e., the higher the relationship level, the lower the automation for interactions between Company A and its customers. However, it is necessary to verify what the interactions are between the companies in question and Company A to better explain the phenomenon. All customers deal with Company A, purchasing packaging films. These products are sold by the roll used at the end of the production line, and are a material found in any manufacturing company. These materials are used, both to package each finished product, through the use of special machines that are adapted, from time to time, to the size of the products, and to wrap the products in pallets for the purpose of transportation or storage, by means of special wrapping machines that, usually, are in the logistics-out department. In both use cases, film consumption is difficult to calculate for the purpose of scheduling orders to suppliers. In addition, the impact of the cost of packaging film on the cost of products is usually insignificant, which is why this product is not even surveyed in the bills of materials. Running out of packaging materials, however, is a problem that for a company can produce significant service level disruptions for their customers. Therefore, the above characteristics make the product a commodity or little more, but one that must always be available. There are two sales strategies defined by Company A: 1) make contracts with scheduled and periodic deliveries, or 2) allow frequent customer purchases, where speed of shipment and stock availability is critical. These two strategies have led Company A to organize in two distinct modes:

Mode 1) with Customers 11, 14, 15, 18: For those who want to schedule, the company provides a salesperson who is responsible for keeping track of the customer's inventory in order to schedule a shipment. At the same time, the company keeps in stock inventories of product so as to ensure the flexibility of necessary deliveries.

Mode 2) for all other customers in the analysis, who do not program, the company, on the contrary, has organized itself by offering any mode of eCommerce-based purchasing or contract facilitation using technology that automates the purchasing process. A portal has been made available, accessing which, the customer is facilitated in choosing their products, because they can consult the purchase history and replicate the document, or choose product by product. The portal accepts 24X360 orders. Products have been allocated to Amazon, which serves as an order concentrator, while logistics remain the responsibility of the supplier company. A WhatsApp Business number has also been activated, where customers only need to take a picture of the label of the product they want to buy to activate an order. A special mailbox has been established where orders can be submitted by photographing the labels or pasting the code found

in the portal, and a special workflow immediately activates logistics for deliveries. Regardless of how the order is received, the customer is immediately sent a confirmation indicating the delivery time. If the goods are in stock, they can be picked up by the customer himself. In addition, there is a figure in charge of contacting the customer by e-mail in case the product requested by the customer is not intelligible, which is sometimes very rough in descriptions. In the case of delayed delivery, customer can track the delivery on the eCommerce portal, which in any case collects all orders.

Customers 11, 14, 15, 18, in fact, adopt a purchasing strategy that plans ahead for inventory, in effect, activating contracts with Company A, which provides not only the technological tools that enable self-service, but also Key Accounts. The aforementioned customers, therefore, often dialogue with Key Accounts for inventory management and planning in general, just as often proceeding to purchase through the latter. Evidence of this deeper relationship is reflected in the measurement, which places Customers 11, 14, 15, 18 in the interdependent relationship, and the fully assisted mode of communication in the green colour. For the remaining customers, purchasing is done as needed in a more or less technology-mediated manner, sometimes, never interacting with Company A management.

7. Conclusions

Measuring relationships and surveying communication processes among the top 18 customers of Company A by revenue value, it appears that customers who have decided to plan film acquisitions share an interdependent relationship with the Company, while those who go to consumption and buy transactional, have basic or cooperative relationships, whose computerized management constitutes criteria for differentiation and loyalty. The reactive nature of these customers' acquisitions, in fact, denotes a desire to maintain a transactional relationship, where immediate product availability, speed in stocking, price, and other transactional factors are factors in loyalty. Therefore, using McDonald's model, it is possible to assume that, indeed, there is a deep correlation between a low-level, basic or cooperative relationship and a communication process almost totally mediated by technologies such as B2B eCommerce. Finally, according to the above scenario, it is possible to confirm that the lower the level of relationship, the lower the interaction between people, since, interactions, are mediated almost entirely by technologies.

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Chapter 5

The Impact of COVID-19 on the Level of Trust and Increased Online Activity of Market Players

Grażyna Plichta

1. Introduction

The COVID-19 pandemic is one of the biggest epidemiological crises which has significantly affected not only the functioning of the global economy but also the behaviour of most societies. Such an unpredictable, globally surprising event certainly has all the characteristics of an exogenous shock. During the COVID-19 pandemic, various restrictions were introduced, including formal restrictions on physical contact. This necessitated the introduction of solutions to enable communication in an alternative form. Most companies, organisations and institutions have introduced remote tools for this purpose and this has resulted in a rapid increase in online activities of market players. The COVID-19 pandemic, due to the aforementioned restrictions, contributed to an increase in online purchasing activity (growth of e-commerce). It also led to an interest in providing services or dealing with formal matters in this form. Online contact in this period, due to such restrictions in force, was in a way forced, but proved convenient for customers, adequate to their needs and preferences, among other things. The form of providing services remotely was introduced in many industries, including medicine (online consultation), which contributed to the rapid growth of telemedicine. The large-scale use of modern technology during the pandemic and the widespread implementation of online consultations and transactional tools led to the recognition of remote contact as a new form. While remote contact was essential during pandemic restrictions, it is now also preferred. Most industries currently use this form. It can be assumed that the pandemic proved to be a test of the digital form of activity and communication between market players. It has also shown that activities in a remote form have a number of benefits and in some situations are more effective than traditional forms of contacts.

It can therefore be assumed that the choice of virtual space for contact between market players will be permanent.

A sudden shock situation tends to cause disruption in relationships. An element that influences the shape of relationships between market players is trust. Interpersonal trust concerns social relationships and influences cooperation with a view to common goals. In contrast, trust in various institutions provides the basis for their legitimacy. The presence of trust influences perceived risk, mitigates the effects of information asymmetry and indirectly influences contact with another person or acceptance of entering into a transaction. Trust is so far the most important factor identified that determines the perceived degree of risk. An important dimension of trust in proper risk communication is transparency. The perceived risk associated with, among other things, the technology used in the process of entering into a transaction can be negatively correlated with the acceptance and willingness to enter into a transaction. Particularly, if the process is not accompanied by transparent information regarding the benefits as well as the potential risks. It is not only the presence of trust that matters, but also its level which is influenced by various factors, positive and negative. The COVID-19 pandemic is a negative factor that significantly affected the level of trust. During the pandemic, due to the emergence of, among other things, uncertainty and fear in many areas of socio-economic life, the level of trust decreased. Its level decreased, as during this period the behaviour of market players that operated mainly in the virtual space varied, including some that cannot be fully described as positive (e.g. disinformation). It is possible to assume that the pandemic, by causing a change in behaviour and a decrease in trust, significantly affected the relationship between market players communicating online.

This study presents the problem of the impact of the Covid-19 pandemic on the behaviour and level of trust and online activity of market players. An attempt was made to show how the pandemic threat, which created uncertainty and fear, affected behavioural change and low levels of trust. This is important because between market players communicating online, and this was mainly the case during the pandemic and is currently the case, higher levels of trust reduce uncertainty in relationships and higher trust influences the sustainability of relationships. In order to present this issue in depth, the verification of assumptions was based on theoretical assumptions, the analysis of desk research and the results of own studies (CAWI survey).

2. The Impact of the Covid-19 Pandemic on Market Players' Online Behaviour and Activities

The Covid-19 pandemic is one of the largest epidemiological crises that has significantly affected the global economy and the functioning of societies. Given its rapidity of spread, lack of predictability and community responses, it has all the characteristics of an exogenous shock (Kohlscheen et al, 2020; McKibbin & Fernando 2021; Noy & Nualsri, 2007). Most often, the context of shock appears in psychology and medicine as an individual phenomenon, or in sociology and economics as a socio-economic phenomenon (Di Crosta et al., 2021, p. 2). Usually, in each case, this shock leads to a crisis situation at the level of social actors and structures, understood as the state of imbalance, breakdown, fluctuation, disorder, etc. (Sagan et al., 2021). The issue of shock is therefore broader than just economic in nature and requires a more holistic approach (Fasth et al., 2022).

The formal restrictions introduced during the pandemic and the fears associated with it changed people's behaviour in the first instance. When reacting to a given shock, one may behave differently in the same circumstances and have different subjective assessment of the situation. As a rule, events that are completely new cannot induce behaviour that will invoke experience, i.e., trigger routine behaviour. The majority of the world's population had not previously experienced what characterised the COVID-19 pandemic. The impact of shock events on behaviour and attitudes has, in most cases, a theoretical basis and is confirmed by the results of many studies (Sagan, 2011). In terms of how people react to this type of long-term threat, among other things, experts' studies show that people react with an increase in emotion. However, after a period of time, they 'get used to it', the emotions weaken and they become accustomed to the threat. Later, they develop new strategies for functioning. A kind of 'daily routine' appears and usually a more optimistic picture emerges in relation to objective reality (Szuster, 2021, pp. 22–25). Any shock-inducing situation results in a crisis situation at the level of individuals, entities and social structures, understood as the state of imbalance, breakdown, disorder, etc. During the pandemic, long-lasting consumer habits were interrupted, accelerated or reversed. This is confirmed by the studies carried out by McKinsey Company, which also verified whether pandemic-induced behaviour would be permanent. According to the results of the so-called stickiness test, which covers the period from 2020 to 2024 and identifies the factors that determine whether particular market behaviours will persist, online shopping, healthcare and remote working were assumed to be at levels similar to those in the pandemic. In contrast, remote learning, leisure air

travel and traditional entertainment are more likely to return to pre-pandemic levels (Remes et al., 2021).

During the pandemic, the imposed restrictions contributed significantly to the increased use of digital technologies. According to data cited in McKinsey & Company's 'Digital Sentiment Survey 2021', in Poland during this period, approximately 5.3 million consumers revised their competences and expanded their skills in using new digital services. This supported, among other things, the implementation of remote shopping, which resulted in a dynamic growth of e-commerce. Online shopping has remained at a high level even today. During the pandemic and nowadays, new technologies are used for communication between market players in most sectors, which affects their development (Plichta, 2022, pp. 44–45). In terms of remote customer service, Customer Self-Service (CSS) became an important strategy already in 2022. Also the increasing range of cloud services offered in the form of XaaS (Everything as a Service). The number of digital voice assistants is expected to reach 8.4 billion units by 2024. The number of connected IoT (Internet of Things) devices is also expected to exceed 25.4 billion in 2030 (Basu, 2022).

During the pandemic, the forms of performing work have changed radically, i.e.,employees have been shifted to a remote or hybrid form of working. This has had a significant impact on the functioning of businesses and employee preferences in the post-pandemic period. According to the McKinsey's report of August 2022, after the pandemic, the majority of employees (more than 50%) prefer remote and hybrid working. Before the pandemic, fewer employees were interested in these forms (around 40%). Based on the data obtained, it was concluded that hybrid working, combining on-site and home-based tasks, will be more popular in future years. In this situation, teams rapidly adapting to this form of working are essential for companies. They also need management and technical systems to supplement the operational model. The competences an employee can and should acquire are also important. In this respect, cognitive skills are important i.e., more value beyond what automated systems and intelligent machines can offer, including the ability to think critically, structure thoughts and communicate effectively while adapting to evolving circumstances. In addition to employee's cognitive skills, digital skills are important and there is a problem with this. During the pandemic period, it was observed, among other things, how important digital skills are in work and interactions. The pandemic also highlighted inequalities in their level and the need to strengthen digital education. A March 2023 publication by the European Parliament entitled "Shaping the digital transformation: an EU strategy" confirms that as many as 42% of EU citizens do not have basic digital skills. With a view to supporting this

and guiding the digital transformation, the European Commission presented the EU Digital Decade programme. It includes specific targets for 2030 in areas such as skills, secure and sustainable digital infrastructure, digital transformation of businesses and digitisation of public services. Among other things, it aims to ensure that citizens and businesses take full advantage of technological advances. It will undoubtedly enable the development of citizens' digital skills and the training of employees. It will also support the digitalisation of public services, while ensuring respect for fundamental rights and values.

3. Trust and Communication Between Market Players in the Hypermedia Space – Overview of the Issue

There is uncertainty at every stage of contact between market players. One of the ways to reduce this uncertainty is to build trust. In Poland, the level of trust in society, i.e.,in the private and public spheres, has remained consistently low for years. According to data cited by the Centre for Public Opinion Research (CBOS) in March 2022, only 19% of respondents state that most people can be trusted. On the other hand, the vast majority of respondents (77%) believe that one should be very cautious in relations with others, i.e.,one cannot trust others. The average value of the overall trust index is –0.83 (a negative value indicates distrust, lack of trust). It should be noted that trust at a low level in Polish society has not changed since 2006.

Trust is particularly important when market players are active in the hypermedia space. Functioning in hypermedia space requires actions that convince the other party that one can be trusted. The level of trust is important when new media are used to communicate remotely (Plichta 2021, pp. 161–162) and online transactions are growing rapidly[1]. In a situation of pandemic restrictions, when online contacts increased dynamically and most activities were carried out in this form, trust decreased. According to the IAB Poland's report of December 2020, the pandemic had a negative impact on the level of trust in the information received online (increase in statements by 47%). It has also had a negative impact on the sense of security of those operating remotely. The majority of internet users confirmed (53%) that COVID-19 had caused a decrease in their personal sense of security online. In the face of uncertainty and anxiety, as experienced during the pandemic, the level of trust was affected by the types of market players.

[1] More information on this issue can be found in Plichta G. (2020) *Role of new media in shaping relationships in e-commerce on B2C market* In: Jaki A. & Ziębicki B. (eds). *Knowledge Economy Society. External and Internal Determinants of Modern Business Management* (pp. 179–194). Toruń: TNOiK Publishing House.

During the pandemic, scientists and doctors enjoyed the highest trust, while trust in the health care system was low, only 33% of Poles trusted it (Kołczyńska 2022, p. 5). Pandemic, among others, illustrates one of the characteristics of trust, i.e.,the ability to influence the behaviour and attitudes of people who trust. Based on the cited numerous studies, it was found that both trust in scientists and the government has a beneficial effect on adherence to recommendations. Those who do not trust either one of them are not susceptible to such appeals (Kołczyńska, 2022).

Trust has a significant impact on relationships between market players and building such relationships is essential. Without the presence of trust, it is difficult to build any relationships. Creating positive relationships is a vital and important process. The level of relationships is supported by a reliable exchange of information and cooperation full of empathy. Relationships should be successively deepened and consolidated (Plichta 2020). Social relationships are characterised by trust between partners, emotional intensity, reciprocity and often longer duration. During the pandemic period, when the form of market players' functioning mostly changed, relationships were created virtually i.e., they were online or hybrid (Czernek-Marszałek, 2022, pp. 106–109). Building a specific relationship shape requires the presence of information. Today's available IT tools and their functionalities enable rapid exchange of information on any topic. Also, modern information channels such as new media offer the possibility of quick access to information, which undoubtedly supports the weaker side of the market, i.e., the consumers. The next few years will see an increase in the importance of building long-term relationships with customers through voice communication and virtual agents used not only to communicate with customers, but also to collect an increasing amount of information (Plichta et al., 2022, p. 33).

4. The Assessment of the Impact of the Covid-19-Induced Shock Situation on the Behaviour of Market Players and the Level of Trust – Own Studies

The occurrence of a sudden shock situation on the market always triggers reactions on the part of recipients. As referred to above, it causes interruptions in the relationships between individual market players, the cause of which is to a large extent a lack or low level of trust. The data presented below, relating to the issues addressed in this study, are a partial result of the main studies carried out as part of a research project entitled: "Determinants and factors affecting the permanence of individual market players' attitudes towards other

stakeholders under conditions of uncertainty and risk resulting from threats caused by an exogenous shock"[2].

During the pandemic period, the imposed restrictions resulted in a dynamic increase in the use of the Internet and online communication and the use of various functionalities available there. A lot of people "moved" their lives online and did most of their meetings and transactions online. Networking is also about a certain way of behaving and the quality of behaviour. As far as behaviour is concerned, during this period Internet users undertook a variety of activities online, including some that cannot quite be described as positive. More than half of the respondents believe that during the pandemic, Internet users unknowingly published more unverified (false) information than they did before (52.60% of responses) and that they knowingly provided more false information online during the pandemic than they did before, which could mislead others (47.06% of responses). Based on these data, it can be concluded that the pandemic determined Internet users to behave negatively, which increased distrust (Table 5.1).

Table 5.1. The behaviour of Internet users during the COVID-19 pandemic

List of statements	Average	% of positive responses
During the pandemic, Internet users do not disclose information about themselves, caring more about their privacy than before	3.89	30.80
During the pandemic, Internet users prefer to leave more information to themselves, they do not share information with other Internet users	4.11	37.72
During the pandemic, Internet users are more likely to unknowingly publish unverified/false information than before	4.65	52.60
During the pandemic, Internet users knowingly provide more unverified information than before, which may mislead others	4.56	47.06

Source: own work.

This increase in activity in virtual space means that a large amount of information, including sensitive information about oneself, is often shared knowingly or unknowingly with others. During the pandemic, sharing of sensitive data was not reduced when the feeling of security decreased. This is confirmed by the low-

[2] Project no. 211/20/MSAP under REV 4.0. This project has been financed by the Minister of Education and Science within the "Regional Initiative of Excellence" Programme for 2019–2022. Project no.: 021/RID/2018/19. Total financing: PLN 11,897,131.40. The research was carried out using the CAWI research tool. Taking into account the extrapolation of research results, data collection was commissioned to the international research company TGM Research, also operating on the Polish market, which carried out this process on a representative consumer panel. The research sample amounted to 578 respondents selected according to gender, age and education. A 7-point Likert scale was used to reflect respondents' opinions towards the statements in the formulated survey questions.

est percentage of positive responses regarding the statement that people operating online during the pandemic do not disclose information about themselves, thus taking more care of their privacy than before (30.80% of responses).

Active market players behave in a certain way, while the relationships between them are very important. As noted earlier, an important element that, among other things, shapes relationships and mitigates the effects of information asymmetry between market players is trust. Its presence influences the perceived risk and, indirectly, the acceptance of entering into a transaction or the contact with another person. In view of the data obtained in the process of own studies, it should be emphasised that the highest percentage of positive responses concerned the statement that only certain people can be relied upon, which confirms the low level of trust (73.36% of responses). More than half of the positive responses concerned the statement that "it is safer not to trust than to trust people" (54.84% of responses) and "people act dishonestly if it cannot be verified" (53.81% of responses). Only 36.68% of respondents feel that people are generally honest. This confirms how low the level of overall trust is (Table 5.2).

Table 5.2. The assessment of honesty and trust – list of positive responses

List of statements	Average	% of positive responses
[Trust 11a] People are generally honest	3.95	36.68
[Trust 11b] Only some people can be relied upon	5.27	73.36
[Trust 11c] Dishonesty usually pays off in life	3.46	28.03
[Trust 11d] People act dishonestly if it cannot be verified	4.72	53.81
[Trust 11e] It is safer not to trust than to trust people	4.76	54.84
[Trust 11f] Not being honest is a way of avoiding trouble	3.56	28.20

Source: own work.

The decrease in trust was probably a result of feelings of fear and uncertainty. This is a significant problem, especially as there has been a rapid increase in online contact. With most activities taking place in virtual space, honesty and trust between market players play a significant role. Market players communicating online should trust each other and the level of trust should not be low. The results of the survey confirm that trust was not at a satisfactory level during this period. All positive responses obtained in relation to honesty and trust during the pandemic are at a significantly low level. The highest percentage of positive responses (only 32.53%) concerns the statement that during the pandemic people are good and kinder to each other than before. The statement that during the pandemic they trust each other more than before has only 25.61% of positive responses. It was also not significantly confirmed that this difficult time will

contribute to people trusting each other more even when others are not honest with them. This statement was confirmed by only 24.39% of responses (Table 5.3).

Table 5.3. The list of positive responses regarding honesty and level of trust during the COVID-19 pandemic period

List of statements	Average	% of positive responses
[Hon12a] The time of the pandemic shows that people are more honest than I previously thought	3.45	21.63
[Hon12b] The time of the pandemic shows that people are more trustworthy than I previously thought	3.54	22.49
[Hon12c] The time of the pandemic shows that people are good and kinder to each other than I previously thought	3.74	32.53
[Hon12d] The time of the pandemic shows that people are more trusting of each other than I previously thought	3.58	25.61
[Hon12e] Currently, during the pandemic I trust others more than before	3.41	21.45
[Hon12f] During the pandemic, people will respond with higher trust, even when others are not honest with them	3.55	24.39

Source: own work.

The positive responses obtained during the studies suggest that the time of the pandemic did not contribute to a better perception and trust of others. On the contrary, trust decreased. This specific, difficult period did not contribute to treating others as good, kind and as people who will do no wrong. This is confirmed by the low level of positive responses that people are more trustworthy during the pandemic (only 22.49%). Thus, it can be concluded that the pandemic shock did not have a positive impact on trust building between the market players. On the contrary, it has resulted in its decrease.

5. Conclusions

The COVID-19 pandemic is one of the largest epidemiological crises of recent years. COVID-19 has helped to accelerate the development of technology enabling mass communication, remote working and real-time transactions to an even greater extent. The results of the studies conducted clearly show that the experience of the pandemic period translates directly into a change in recipients' behaviour, including an expansion of their online activity. With regard to online activity, trust is important. However, as mentioned on the basis of available data, it is at a low level. For a long time now, the majority of people do not trust other people and the safest life strategy is not to trust. The data cited from own studies also confirm this. More than half of the respondents stated that "it is safer not to trust than to trust" (54.84%). This indicates a large deficit in social

capital and the COVID-19 pandemic shock did not contribute to positive changes in this regard.

As noted, such an exogenous shock can contribute to behavioural and preference changes in a relatively short period of time at the meso- and macroeconomic level. The large-scale use of modern technology during the pandemic and the widespread implementation of remote contact and transaction tools have made this new form commonplace today. Currently, in the post-pandemic period, remote or hybrid working and online communication are at a high level. Due to the experience of, among other things, fast communication, convenience and lower costs, online contacts and transactions are preferred by customers. Most industries are currently using this form. The pandemic period has shown how important digitalisation is. The COVID-19 pandemic undoubtedly accelerated its development, which is nowadays welcomed by market players.

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Chapter 6

Review of Research on the Application of the Industrial Internet of Things in Industry 4.0

Mateusz Mastalerz

1. Introduction

The aim of this monograph is to present the issues of the Industrial Internet of Things (*Industrial Internet of Things* – IIoT) in the context of the development of Industry 4.0. IIoT is also an expression of a more general trend in the evolution of IT systems, including the preceding IIoT, artificial intelligence (AI) or the construction of fifth-generation (5G) networks, enabling the use of artificial intelligence in economic exchange and manufacturing processes, (Zhong et al., 2017; Puślecki, 2021).

The solutions above becoming the fundaments of IT systems, Puślecki (2021, p. 124) writes, without direct human participation will "take over many decision-making processes". IIoT is one of the manifestations of machine learning (*Machine Learning*) and the use of *AI*, understood as the ability of the system *IT* to correctly interpret external data, learn from that data and use those experiences to achieve specific goals and targets through flexible adaptation (Kaplan & Haenlein 2019).

Industry 4.0 is also seen as synonymous with the fourth industrial revolution (Zhong et al., 2017). This term is understood as the general public socio-economic and technological changes resulting from the implementation of new technologies, "such as *Internet of Things*, *BigData*, as well as the dynamic development of the fields of artificial intelligence, nanotechnology or rapid prototyping" (Iwański, 2017, p. 22). IIoT is an advanced application of IoT, a new technology paradigm, based on the concept of encapsulating computers and their devices into a global network in which they will be able to interact with each other without human intermediation (Lee & Lee, 2015). IoT can therefore be conceptualized as an extension of Internet functions in order to use existing computer resources, even low-end ones, to interact in economic exchange processes (Fleisch, 2010).

IIoT stands for incorporating IoT into manufacturing processes. For this reason, it fits into the concept of Industry 4.0.

2. Industry 4.0 Concept

In scientific circulation, the term Industry 4.0 (*Related to Industrie 4.0:*) was first used by Klaus Schwab during *World Economic Forum* in 2011 (Iwański, 2017), although its genesis dates back to years earlier. This concept describes the results of analytical, conceptual and forecasting work on future changes of strategic importance for the German economy. They were presented under the name Industry 4.0 in 2010 at the Hannover Fair in the section on the future of industry. The key area of these changes has been defined as 'Digital economy and society' (Gajdzik & Grabowska, 2018; Karmakar et al., 2019).

The concept of Industry 4.0 in a narrower sense, as Gajdzik & Grabowska (2018, p. 223) writes, "means the integration of systems and the creation of networks and the integration of people with digitally controlled machines, widely using the Internet and information technologies", while in broad terms – "a common term combining technology and the organization of the value-added chain (*collective term for technologies and concepts of value chain organization*)". In Industry 4.0, information collection and data correlation can take place at any time, from anywhere, through the use of computers and devices connected to the network. In this way, they are unified within the virtual world, which is possible thanks to the dissemination and distribution of automatic technology and online communication networks (Gajdzik & Grabowska, 2018).

The German company Bosch is considered to be the forerunner of the practical applications of Industry 4.0, and German industry is considered to be a leader in the implementation of this concept. Germany is therefore also a leader in the use of IIoT among countries (Karmakar et al., 2019). The growing interest in this solution can be evidenced by the fact that the idea of "smart manufacturing" has met with a wide response in Chinese science, and the practical development of this idea has been introduced into the government's long-term development plans in China (Zhong et al., 2017).

The number of companies using the IIoT across various industries is systematically growing in the world, and this trend finds strong support in the policy of public authorities (Gajdzik & Grabowska 2018; Karmakar et al., 2019; Wozniak et al., 2019). The essence of those implementations is the realisation of the *smart manufacturing* paradigm, making it possible to optimise production and product transactions by making full use of advanced information and production technologies. The spread of these practices means the formation

of a new production model based on the achievements of science and IT technology, starting from the stage of design, production, production management and integration of the entire life cycle of products manufactured in this way. What's more, *smart manufacturing*, provides opportunities for cloud computing (*Cloud manufacturing*), IoT, transforming technology into service resources and vice versa, and sharing and disseminating those resources (Zhong et al., 2017). Industry 4.0 sets the trend of increasing introduction of automation, remote data exchange, analysis and communication between computers into production processes (McFarlane, 2019). Creating an integrated network, they constitute a kind of "machine park" of factories operating in accordance with the principles of Industry 4.0, i.e. autonomous devices, managed by a sensor system, with human activity reduced to a minimum.

IIoT represents a qualitative change in the intelligent manufacturing model, taking IoT to the next level. Both of these intelligent systems, as well as BigData or cloud computing, are considered basic tools of Industry 4.0, because self-learning of IT systems is possible only in a BigData environment, and the main communication processes between elements of these systems take place in cloud computing (Sanghavi et al., 2019). These tools are therefore a kind of infrastructure for Industry 4.0, which has full control over the entire value chain and product life cycle.

3. The Origins and Concept of the Industrial Internet of Things IIoT

IIoT is, as mentioned, an advanced, manufacturing-related variant of an intelligent IoT system, which is an IoT subsystem (Munirathinam, 2020). The latter concept was introduced in 1999 by Kevin Ashton, during a presentation on use of RFID technology (*Radio-frequency identification)* and the Internet in the supply chain of Company Procter & Gamble (Toddler, 2018). However, this term began to be used on a larger scale only from 2011, when the market research company Gartner, in one of its reports, described IoT as a new emerging market phenomenon. The following year, IoT was the leading topic at Europe's largest LeWeb conference. It entered general circulation in 2014 in connection with Google's purchase of Nest (Karmakar et al., 2019).

The IoT concept does not have a single, generally accepted definition, but in the literature the most frequently cited one is the definition proposed in 2010 by the organization Internet Engineering Task Force (IETF). The essence of IoT is considered to be connecting all IT devices to ensure their smooth communication and contextual provision of mutual services by them. This is possible thanks to the development of RFID tags, sensors, actuators, mobile phones.

Thanks to them, IoT materialises, i.e. the occurrence of interaction and cooperation between devices connected to the network occurs (Culic et al., 2020).

In more extensive approaches, IoT is defined in three aspects:

- technological (autonomous, i.e. not requiring human activity, telecommunications network, wired or wirelessly connected devices acquiring, sharing, processing data, interacting under the influence of these data with the environment);
- architectural (the concept of IT architecture enabling interoperability of different ICT systems with different domain applications, consisting of layers such as hardware, communication infrastructure, software and integration through defined IT services to be provided);
- business (ecosystem of business services capable of collecting and processing information (interaction), connected in a network ensuring interoperability and synergy of applications) (Maśniak et al., 2019, p. 5).

IoT usage is increasing. This is evidenced by the growing expenditures on its development. In 2018 they amounted to USD 722.5 billion, i.e. 14.6% more than in the previous year. In 2020, they increased to 1 trillion dollars, and in 2021 they were another 100 billion more. Further increases in expenditures are forecast for upcoming years (Od chmury…, 2019, p. 6). In fact, however, they are growing more slowly than forecast (The crisis has hit…, 2023).

The evolution of IoT, as mentioned, has led to the creation of a more advanced segment of it, i.e. IIoT. It contains, as Iwański (2017, p. 22) writes, "the idea of a modern, intelligent factory – *Smart Factory*". It is to be based on interconnections, automation, progressive autonomy (reduction of human activity), machine learning and real-time data exchange (Munirathinam, 2020). Compared to IoT, the IIoT represents a qualitative step towards the fourth industrial revolution, as Industry 4.0 also includes human integration in the production process (Sanghavi et al., 2019). There is no special role for a human in this concept. It is to become an inherent element of the IIoT system. This system is therefore a new, previously unknown form of industrial production, which will respond directly to the needs and expectations of not only the economy, but also customers (Culic et al., 2019). Within a modular structure *Smart Factories* Industry 4.0, physical processes are remotely monitored and virtual copies are created, as well as the necessary decisions are made. Thanks to IoT and communication modules, individual components of the IIoT system communicate in real time with each other and with people. Thanks to *Internet of Services*, individual products and services are offered to customers (Karmakar et al., 2019). Broadly speaking, the IIoT, as Gajdzik & Grabowska (2018, p. 223) write, "creates cyber-physical structures in *smart factories*, using *cloud computing* for data storage and processing,

automatic internal material handling, material processing on production lines, communication between machines and products, robotic process, innovative materials and the use of 3D printing technology to, for example, replenishment of the spare parts warehouse."

IIoT can be conceptualized like a network of Internet-connected machines and advanced analytical platforms that process the data they produce. The devices in this "factory" have varying degrees of technological sophistication from ordinary sensors to complex industrial robots. Data between them are transmitted via the Internet, and these devices are managed with the help of appropriate programs. Ultimately, that 'factory' supplies goods and services in accordance with the domain profile which it describes (Culic et al., 2019). The IIoT is thus used to create value for industrial processes, supply chains, products and services in specific fields (McFarlane, 2019). Therefore, it implements the goals and tasks of traditional production, but in a way that has not yet occurred, and is characteristic only for Industry 4.0. An important advantage, but also – as we will discuss later – a disadvantage of IIoT is that it is based on the standard universal IP connection (*Internet Protocol*), and individual machines and devices connect to each other using the same protocols as other users and use the architecture of the Universal Internet (Karmakar et al., 2019). Thus, the IIoT is not a special, separate system, but at the same time it qualitatively changes modern production processes and redefines the role of man in them.

4. Use of and Prospects for the Development of the IIoT

IIoT is primarily used in various industries. Regardless of the field of manufacture, the effects of its implementation involve (McFarlane, 2019, pp. 8–9):

- integration of data from suppliers, supplier logisticians, logistics suppliers, customers;
- the constant trend of introducing new technologies into peripherals, tools and computer equipment;
- continuous deepening of the integration of distributed production;
- continuous improvement of the quality of the production process through the expansion of the system of sensors for the control of raw material sources, components and distribution of product control.

However, it should be noted that the practical application of The IIoT is not without its obstacles. The biggest ones include problems with the standardization of industrial operations in terms of integration between individual layers of the system, i.e. hardware, communication, software, IT services, as well as

production data. These difficulties arise to a large extent from the use of different software systems. Hence, standardization is one of the key challenges for the IIoT.

The second important limitation in the development of IIoT applications concerns the provision of data about products and processes occurring throughout their life cycle. Data on this can be found in the databases of suppliers, manufacturers, distributors, retailers and service providers, etc. These problems could be solved more quickly if this data could be seamlessly collected and exchanged throughout the product lifecycle in real time. The development of the IIoT is also not conducive to the limited state of empirical research. This makes it impossible to identify and address other limitations the system faces (McFarlane, 2019).

Despite these constraints, more and more companies and industries are implementing IIoT systems (Karmakar et al., 2019). By 2020, it is estimated that up to 20 billion different components could be incorporated into existing IIoT systems worldwide, from machines to control sensors to peripherals. Industry 4.0 is thus beginning to influence lifestyles, labour relations and the role and importance of the human person in production processes (Munirathinam, 2020). These processes seem to be inevitable and irreversible. In other words, the IIoT, and in the broader context Industry 4.0, completely transforms the modern reality, not only the economic one.

5. IIoT Cybersecurity

A key challenge for the IIoT is the problem of cybersecurity, although it is not recognized as a technological problem outlined above, systematically overcome, but as one which results from the fact that the IIoT uses the architecture of the universal Internet (Dźwiarek, 2021). Its primary source is the very development of IIoT applications, causing more and more data to appear in it, which arouses the interest of cybercriminals and thus requires effective protection. As highlighted in the literature, if the issue of their security is not successfully addressed, the potential of the IIoT may not be fully exploited (Munirathinam, 2020).

Data exposure of IIoT to attacks in cyberspace is based on the following premises (Dźwiarek, 2021):

- possibility of unauthorized access to control systems production, e.g. for the purpose of reprogramming machines;
- continuous "convergence" between standard systems IT vs. industrial;
- performing all IIoT operations based on a common IP system entailing the danger of unauthorized entry into the IIoT system and violation its integrity;

- software development for the IIoT based on reuse components of software prepared for other companies;
- the possibility of attacks by cybercriminals aimed at destabilizing the production processes.

Essential to solving the problem IIoT data cybersecurity are the analytics of data entered into the Internet. It should be categorized by relevant applications and include: offline analytics, real-time analytics, level analytics *Business Intelligence*, memory-level analytics and common analytics (Dźwiarek, 2021). Data analytics can be divided into four parts (Karmakar et al., 2019):

- data inspection – aimed at identifying corrupted or inaccurate files;
- cleaning – modification of damaged or inaccurate data through their modification, deletion or replacement by using tools for scripting;
- transformation – converting files to another format;
- modelling – creating a data model dedicated exclusively to a given IIoT through the use of specific formal techniques.

To eliminate the security threat, IIoT has a number of security measures dedicated only to these systems. One of them is IIoT edge communication protocols. These are the PAN or LAN protocols used in wireless networks. However, it is crucial that the IIoT is secured with multiple security protocols simultaneously and that their functioning is correlated. The IIoT safety requirements standards are defined by two IICs and *OpenFog Consortium*. It is recommended to build a strategy for securing these systems on their complementary use. This will allow you to evenly distribute the burden associated with the use of security systems, and at the same time treat one of these standards as a backup if the other fails. Work to elevate IIoT cybersecurity is moving towards integrating security standards with 5G technology (Gebremichael et al., 2016).

It should be stressed that the possibility of satisfactorily solving the problem of cybersecurity of IIoT systems is not only a matter of appropriate data analytics procedures, but also of legal solutions. At the level of EU law, the cybersecurity of information control systems is regulated by Directive 2006/42/EC, known as the "Machinery Directive". Because it was enacted seventeen years ago, it does not sufficiently cover all the types of threats to which these systems may be exposed today. The European Commission has therefore started work on a regulation that will take them all into account. Work on it is at the final stage (Dźwiarek, 2021). Solving the problem of IIoT cybersecurity, on which its further development and use depend, is therefore a complex issue, requiring action not only in the technological or procedural dimension, but also in the legal dimension.

6. Conclusion

IIoT is classified by researchers as an IoT subsystem, but qualitatively different, because it fits into the Industry 4.0 paradigm, considered to reflect the "fourth industrial revolution". It also sets a new trend in the development of intelligent systems, which inevitably change the conditions and realities of production processes, redefining the role and importance of man in these systems. The IIoT can be considered a factory model appropriate for Industry 4.0, integrating all its components in a virtual cloud. A human being is one of the elements that are subject to integration. This means that the IIoT does not yet have a special, subjective role, as even the burden of decision-making is shifted towards artificial intelligence.

Dynamics of development of the IIoT, as measured by the investment of companies, especially multinational corporations, and governments in many countries, is very high. Germany is considered to be the leader in the development of the IIoT, but its importance for the development of its own national economy has also been recognized by China, which has included its progress in its five-year plans.

For these reasons, IIoT continues to be technologically improved. The key challenge for the development of these systems is considered to be the successful solution of their cybersecurity problem. The weakness of IIoT from this point of view is that they benefit equally from other users of architecture of the Universal Internet, and its operation is based on the universal IP protocol. The ability to address the security of IIoT data and processes depends on the development of appropriate control procedures (data analytics), effective security tools (IIoT-only edge communication protocols), and legal (enactment of legislation that addresses all threats to information control systems). Without a satisfactory solution to the IIoT cybersecurity problem, the potential of these systems cannot be fully exploited.

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Chapter 7

Advancing the Concept of Smart Cities: Principles and an Original Approach to Geospatial Analysis

Dominik Dawiec

1. Introduction

Contemporary cities are faced with the challenge of ensuring coherence between social, economic, and environmental phenomena. The pursuit of continuous process improvement, increased mobility, and infrastructure integration has become a priority in the era of widespread urbanization. To achieve these goals, support from information system technologies is essential. Hence, the concept of smart city, which aims to apply modern information and communication technologies to manage cities in an efficient and sustainable manner, is becoming increasingly popular. This article will present the concept of smart city, its principles, and ways of implementing it, as well as the author's original approach to analyzing the distribution and importance of geospatial points. It is important to note that this article does not rely on existing research but instead presents the author's unique perspective on geospatial data analysis. Additionally, the article includes the author's own Python code, which allows readers to utilize it without wondering about the process of creating it.

2. Review of Research in the Smart City Domain

Numerous researchers and scientists have made significant contributions to the field of smart cities. Their work has expanded our understanding of smart city concepts and provided valuable insights into their implementation. Here are a few notable works:

1. A. Gharaibeh et al. (2017) in the article "Smart Cities: A Survey on Data Management, Security, and Enabling Technologies" provides an overview of the importance of data management, security, and enabling technologies in the context of smart cities. It highlights the increasing urbanization and connectivity

in cities, emphasizing the need for utilizing computational and communication resources to integrate and analyze vast amounts of data. The article also introduces the fundamental objectives of smart cities, including smart economy, smart governance, smart people, smart mobility, smart environment, and smart living.

2. Sarker, I. H. (2022) in the article, "Smart City Data Science: Towards data-driven smart cities with open research issues" explores the role of data science in driving the transformation of cities into smart cities. It highlights the importance of extracting insights from city data and building data-driven models to automate and improve the intelligence of city systems. The paper discusses the use of scientific methodologies and machine learning techniques in analyzing historical data to enhance decision-making processes and deliver intelligent services to citizens. Additionally, the article identifies ten open research issues for future development and research in the field of data-driven smart cities. It serves as a reference guide for researchers, professionals and policy-makers interested in the technological aspects of smart city data science.

3. S. Myeong et al. (2022) This article, "Research Models and Methodologies on the Smart City: A Systematic Literature Review" presents a systematic review of smart city literature published between 2011 and 2020. The study aims to analyze the trends and characteristics of smart city research and propose research directions in the field. The review examines research methods and research content, including variables such as publication year, research methodologies, research purposes, data collection methods and utilization of research results. The research content analysis includes keywords related to research topics, analysis units, and criteria for smart city security and general classification. The findings of this study provide valuable insights and guidelines for future smart city development projects.

These are just a few examples of the extensive research conducted by scientists and researchers in the field of smart cities. Their contributions have greatly influenced the understanding and development of smart city concepts, providing valuable frameworks, methodologies and insights for future endeavors.

3. Smart City

The concept of Smart City was first introduced in the publication "The Technopolis Phenomenon: Smart Cities, Fast Systems, Global Networks" (Kozmetsky et al., 1992). This concept was an extension of the authors' earlier idea of "Technopolis" which means cities that combine the commercialization of technology with the public and private sectors to stimulate economic development and promote technological diversification (Kozmetsky et al., 1989). Proto-intelligent urbanism, despite bearing some resemblance to present-day smart

cities, has undergone significant evolution, expansion, and diversification in its definition, now encompassing various fields of study and ideologies.

During the 2nd International Life Extension Technology Workshop in Paris at the start of the new millennium, Robert E. Hall introduced the concept of the intelligent city. According to Hall, this urban center of the future would prioritize safety, environmental sustainability, and efficiency. This would be achieved by utilizing advanced and integrated materials, sensors, electronics, and networks in the design, construction, and maintenance of all structures, including those related to power, water and transportation. These systems would be connected to computer systems consisting of databases, tracking and decision-making algorithms (Hall et al., 2000).

In 2017, Mora and his colleagues published a bibliometric analysis of the development of intelligent urbanism. This analysis showed that between 1992 and 2010, 49 scientific articles and 31 conference papers were published. During this period, a split emerged between two dominant interpretive models (Table 7.1). On the one hand, smart cities are described as the result of a balanced combination of human, social, cultural, economic, environmental, and technological factors, which can be described as a holistic interpretation. On the other, the second group of publications presents a technocentric interpretation of smart cities (Mora et al., 2017). As we move towards the future, it is essential to understand the complexity of the concept of smart cities and the need for a holistic interpretation that considers various factors. The technocentric interpretation, while valuable, should not overshadow the social, cultural, and environmental considerations of smart cities.

Table 7.1. Comparison of Interpretive Models of Smart Cities

Aspect	Holistic Interpretation	Technocentric Interpretation
Factors	Human, social, cultural, economic, environmental, and technological	Technological
Approach	Balanced combination of factors	Emphasis on technology
Focus	Cities as complex systems	Cities as technological systems
Goals	Sustainable, livable, and inclusive cities	Efficient and optimized cities
Critics	May overlook the potential negative impacts of technology on society and environment	May overlook the importance of social and cultural factors in city development
Examples	Barcelona, Amsterdam, Singapore	Songdo, Masdar City, IBM's Smarter Cities initiative

Source: own elaboration based on (Mora et al., 2017).

The main premise of a smart city is the integration of technology with good management. The idea of an intelligent city aims to improve actions in categories such as citizens, offices, buildings, transport, infrastructure, communication, and health (Table 7.2).

Table 7.2. Categories of Smart City Development

Categories	Description
Citizens	An essential element of a smart city, which includes both active citizens who use various goods offered by the city and who do not use such services. In both cases, it is important to ensure safety and a comfortable life.
Government offices	Institutions that affect the functioning of the city, such as town halls, police or hospitals. It is important for these institutions to operate efficiently and effectively to provide residents with an appropriate level of safety and quick and efficient assistance when needed.
Buildings	An important element of a smart city, due to their impact on the natural environment and energy efficiency. Therefore, it is important for buildings to be designed in accordance with ecological principles and equipped with appropriate technological solutions to minimize energy consumption.
Transportation	Another important element of a smart city. To reduce the negative impact of transportation on the natural environment, efforts are being made to increase the use of public transport and city bikes, as well as to promote other eco-friendly forms of transport, such as electric scooters or hybrid cars.
Infrastructure	A key element of the smart city concept, which includes road networks, airports, railway stations, and seaports. It is important for infrastructure to be designed safely and efficiently, and also to be accessible to all city users.
Communication	Another crucial category that includes information technologies used to integrate various systems within the city. This can improve both transportation and other areas of residents' lives.
Health	This category includes various factors that affect residents' health, such as air pollution or noise. It is important for cities to act to ensure a clean and healthy environment for residents.

Source: own elaboration based on (Tundys et al., 2022).

As smart city development continues to expand, it is important to recognize the significance of each category and their integration in creating a comprehensive and sustainable city. The implementation of technology should not be prioritized over social, cultural, and environmental factors. Rather, a balanced approach that considers all aspects of city development is necessary for creating a smart city that benefits all its inhabitants. As we move towards the future, it is crucial to remember that the ultimate goal of a smart city is to improve the quality of life for all citizens, and this can only be achieved through a holistic and inclusive approach.

As part of the author's original solution, the author wrote Python code allowing for the analysis of commercial rental properties in terms of their integration with the surrounding area. In the first stage, a web scraper was written in Python using the numpy, pandas, selenium, and beautifulsoup libraries. The result of data scraping was a table containing, among others, columns with geographic latitude and longitude. Next, geospatial points were collected for geographical locations in Krakow, along with their addresses. Data was grouped into 7 categories:

- education (high schools, primary schools, technical schools, vocational schools),
- sports and recreation (football stadiums, gyms, indoor swimming pools, natural swimming pools, orlik soccer fields, parks, street workouts, rope parks, horseback riding centers, parks),

- health (hospitals, pharmacies, emergency rooms, primary care units),
- retail (grocery stores, shopping centers, Rossman stores, Żabka stores),
- government institutions (district court, police stations, municipal police departments, tax administration chambers, tax offices, custodies and penitentiaries,
- culture and religion (museums, cinemas, chapels, Roman Catholic Churches),
- other (city center, Krakow–Balice Airport, Vistula river).

With the addresses of the mentioned points, the author's next step was to apply geocoding. Geocoding is a term referring to the process of assigning geographic coordinates or flat rectangular coordinates to postal addresses. It is a method that allows obtaining spatial information based on information stored in databases in which an address field is one of the record fields. To achieve this, the geopy library was used to create the function (Figure 7.1).

```
def get_lat_long(dataframe):
    # Initialize the geolocator using the Nominatim class from the geopy library
    geolocator = Nominatim(user_agent="http")

    # Initialize the progress bar
    pbar = tqdm(total=len(dataframe))

    # Iterate through each row in the dataframe
    for index, row in dataframe.iterrows():
        # Get the address from the current row
        address = row['Address']

        # Geocode the address using the geolocator
        location = geolocator.geocode(address)

        # Try to update the latitude column in the dataframe
        try:
            dataframe.loc[index, 'Latitude'] = location.latitude
        except:
            # If an error occurs, set the latitude to "N/A" and print a message
            dataframe.loc[index, 'Latitude'] = "N/A"
            print(f"{address} could not be reached for the latitude")

        # Try to update the longitude column in the dataframe
        try:
            dataframe.loc[index, 'Longitude'] = location.longitude
        except:
            # If an error occurs, set the longitude to "N/A" and print a message
            dataframe.loc[index, 'Longitude'] = "N/A"
            print(f"{address} could not be reached for the longitude")

        # Update the progress bar
        pbar.update(1)

    # Close the progress bar
    pbar.close()
```

Figure 7.1. Geocoding function

Source: own elaboration.

When applied to a dataframe as input (Figure 7.2), the function created two new columns "Latitude" and "Longitude" based on the "Address" column (Figure 7.3).

```
[5]: grocery_store.head()
```

[5]:

	Category	Name	Address
0	Grocery Store	Biedronka	Piastowska 49, 30-211 Kraków
1	Grocery Store	Biedronka	Pachońskiego 8, 31-229 Kraków
2	Grocery Store	Biedronka	osiedle 2 Pułku Lotniczego 1 Kraków
3	Grocery Store	Biedronka	Jerzmanowskiego 12a, 30-836 Kraków
4	Grocery Store	Biedronka	Wysłouchów 22a, 30-611 Kraków

Figure 7.2. Dataframe before geocoding function
Source: Own elaboration

```
[5]: grocery_store.head()
```

[5]:

	Category	Name	Address
0	Grocery Store	Biedronka	Piastowska 49, 30-211 Kraków
1	Grocery Store	Biedronka	Pachońskiego 8, 31-229 Kraków
2	Grocery Store	Biedronka	osiedle 2 Pułku Lotniczego 1 Kraków
3	Grocery Store	Biedronka	Jerzmanowskiego 12a, 30-836 Kraków
4	Grocery Store	Biedronka	Wysłouchów 22a, 30-611 Kraków

Figure 7.3. Dataframe after geocoding function
Source: own elaboration.

Using the latitude and longitude of scraped rental points and geospatial data, the author was able to write code for creating features of rental points based on distances between them and geospatial data. To do this, the following functions were used:

The "get_distance" function (Figure 7.4) calculates the distance between a reference point (provided as an argument) and the latitude and longitude of each row in the dataframe. The function uses the geopy library and its "great_circle" function, which calculates the distance between two points on the surface of the earth.

```
def get_distance(reference_point, name):
    df[name] = df.apply(lambda row: great_circle((row['Latitude'], row['Longitude']), reference_point).m, axis=1)
```

Figure 7.4. get_distance function code
Source: Own elaboration

The "haversine" function (Figure 7.5) calculates the distance between two points on the surface of the earth, taking into account the curvature of the earth. The function uses the Haversine formula, which is commonly used in geodesy and navigation. The function returns the result in kilometers.

```
def haversine(lat1, lon1, lat2, lon2):
    # convert decimal degrees to radians
    lon1, lat1, lon2, lat2 = map(radians, [lon1, lat1, lon2, lat2])

    # Haversine formula
    dlon = lon2 - lon1
    dlat = lat2 - lat1
    a = sin(dlat/2)**2 + cos(lat1) * cos(lat2) * sin(dlon/2)**2
    c = 2 * atan2(sqrt(a), sqrt(1-a))
    r = 6371 # Radius of earth in kilometers. Use 3956 for miles
    return c * r
```

Figure 7.5. Haversine function code
Source: own elaboration.

The "calculate_number_of_places" function (Figure 7.6) calculates the number of places within a specified distance of each point in the dataframe. The function uses the "haversine" function to calculate the distance between two points, and then counts the number of places that are within a specified distance of each point in the dataframe. The function adds the result to a new column in the dataframe.

```
def calculate_number_of_places(df, df2, distancekm, name):

    # Initialize the progress bar
    pbar = tqdm(total=len(df))

    # Iterate through each row in df
    for index, row in df.iterrows():
        lat1 = row['Latitude']
        lon1 = row['Longitude']
        count = 0

        # Iterate through each row in df2
        for index2, row2 in df2.iterrows():
            lat2 = row2['Latitude']
            lon2 = row2['Longitude']

            # Calculate the distance between the two points using the Haversine formula
            distance = haversine(lat1, lon1, lat2, lon2)

            # If the distance is less than 5 km, increase the count
            if distance < distancekm:
                count += 1

        # Update the progress bar
        pbar.update(1)

        # Add the count to the new column in df
        df.at[index, name] = count

    pbar.close()
```

Figure 7.6. calculate_number_of_places function code
Source: own elaboration.

The "calculate_min_straightline_distance" function (Figure 7.7) calculates the minimum distance between each point in the dataframe and other points in another dataframe. The function uses the "haversine" function to calculate the distance between two points, and then looks for the minimum distance for each point in the dataframe. The function adds the result to a new column in the dataframe.

```
def calculate_min_straightline_distance(df, df2, name):

    # Initialize the progress bar
    pbar = tqdm(total=len(df))

    for index, row in df.iterrows():
        min_distance = float('inf')
        for index2, row2 in df2.iterrows():
            distance = haversine(row['Latitude'], row['Longitude'], row2['Latitude'], row2['Longitude'])
            if distance < min_distance:
                min_distance = distance
        df.loc[index, name] = min_distance

        # Update the progress bar
        pbar.update(1)

    pbar.close()
```

Figure 7.7. calculate_min_straightline_distance function code
Source: own elaboration.

As a result of performing the above functions, for example in the following way (Figure 7.8) we obtain the following columns (Table 7.3).

```
calculate_number_of_places(df, df34, 0.5, "number_of_grocery_store_in_500m")
calculate_number_of_places(df, df34, 1, "number_of_grocery_store_in_1km")
calculate_number_of_places(df, df34, 2, "number_of_grocery_store_in_2km")
calculate_number_of_places(df, df34, 3, "number_of_grocery_store_in_3km")
calculate_number_of_places(df, df34, 4, "number_of_grocery_store_in_4km")
calculate_number_of_places(df, df34, 5, "number_of_grocery_store_in_5km")
calculate_number_of_places(df, df34, 10, "number_of_grocery_store_in_10km")
calculate_min_straightline_distance(df, df34, "nearest_grocery_store")
```

Figure 7.8. Using created functions

Source: own elaboration.

Table 7.3. New columns

Column name	Column description
number_of_cinemas_in_500m	Number of cinemas within a straight radius of 500m
number_of_cinemas_in_1km	Number of cinemas within a straight radius of 1km
number_of_cinemas_in_2km	Number of cinemas within a straight radius of 2km
number_of_cinemas_in_3km	Number of cinemas within a straight radius of 3km
number_of_cinemas_in_4km	Number of cinemas within a straight radius of 4km
number_of_cinemas_in_5km	Number of cinemas within a straight radius of 5km
number_of_cinemas_in_10km	Number of cinemas within a straight radius of 10km
nearest_cinema	Distance in a straight line to the nearest cinema in kilometers

Source: own elaboration.

In order to facilitate the comprehensive analysis and selection of the optimal location for establishing a commercial enterprise, the code has been replicated for all geospatial points. This approach enables the filtering and analysis of each commercial rental property based on a range of relevant columns, thereby enabling a thorough evaluation of potential business locations.

Geospatial data is revolutionizing the way we approach urban planning and development, paving the way for smarter, more sustainable cities. One of the key ways in which geospatial data is being used is in the analysis of various types of geospatial points. By analyzing this data, we can gain valuable insights into everything from the distance between commercial properties to the number of pharmacies within a certain radius.

The process of analyzing geospatial data for each type of point is a crucial step in the creation of smart cities. For example, when it comes to commercial properties, geospatial data can be used to filter properties based on a variety of criteria, such as the distance from the nearest competitor store or the proximity

to primary schools and parks. By using this data, we can create more attractive commercial areas that will attract more customers and contribute to the growth of local economies.

In addition to commercial properties, geospatial data can also be used to analyze a range of other points of interest, such as transportation hubs, healthcare facilities, and public parks. By analyzing these points and identifying patterns, we can create more efficient and effective urban environments that meet the needs of residents and visitors alike.

Ultimately, the use of geospatial data is a powerful tool in the creation of smart cities. By leveraging this technology, we can make more informed decisions about urban planning and development, leading to more sustainable, livable, and thriving cities for everyone.

4. Conclusions

With rapid urbanization and the growing demands of residents, city authorities are facing unprecedented challenges in managing and planning their cities. To meet these challenges, many are turning to geospatial data analysis, a powerful tool that allows for a better understanding of the complex relationships between people, places, and activities.

By analyzing geospatial data, city authorities can gain valuable insights into residents' needs and better plan public transportation, urban infrastructure, and spatial development. This can make the city more friendly and accessible to residents, as well as more efficient in utilizing its resources. For entrepreneurs, geospatial data analysis is also proving to be a game-changer. With the ability to analyze local market data, competition, and customer needs, entrepreneurs can make better decisions about where to locate their businesses. This can translate into greater business effectiveness, as well as increased opportunities for growth and success.

Moreover, better urban planning is not only beneficial for city authorities and entrepreneurs, but also for residents themselves. A well-planned city can help to reduce residents' dependence on cars, as more efficient public transportation, cycling, and walking become viable options. This not only helps to reduce traffic congestion and air pollution, but also promotes healthier and more active lifestyles.

In conclusion, geospatial data analysis is a powerful tool that can help city authorities, entrepreneurs, and residents alike to create more livable, sustainable, and prosperous cities. By leveraging the insights provided by geospatial data analysis, we can better understand the complex interactions between people,

places, and activities, and use this knowledge to make informed decisions about urban planning, business development, and lifestyle choices.

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PART II RELATIONSHIP MANAGEMENT IN MODERN ORGANIZATIONS

Chapter 8

Qualitative Analysis of Corporate Bankers' Perception of Their Clients' Communication, of Trust in a Client, and of Relationship Commitment

Matthias Kretschmar

1. Introduction

Commitment of a banker in a commercial banking relationship depends on the banker's confidence that the corporate client will behave in an appropriate way in future and that he/she is always given sufficient information for a substantial assessment of the company. Therefore, the company's communication plays a central role in a relationship with the bank that is characterized by trust and commitment. This study investigates items that form these central constructs of a corporate banking relationship. It presents the results of qualitative research conducted in Germany on corporate bankers' perception of good communication of their corporate clients, of trust in a client, and of relationship commitment.

2. Methodology Applied for the Analysis of the Interviews with Bankers

There is no one dominant method for the analysis of qualitative data generated from interviews. However, code-based methods, such as those used in grounded theory or qualitative content analysis, are widely applied in scientific research. For informational interviews qualitative content analysis is particularly appropriate, whereas for theory-generating interviews, coding methods based on grounded theory are often recommended (Bogner et al., 2014).

This study focusses on the drivers behind certain constructs that play an essential role in the relationship between client and banker in corporate banking. Theoretical background for the constructs "perceived good communication

of a corporate client", "trust in a corporate client", and "commitment to the relationship" exists already (e.g., the commitment-trust theory by Morgan & Hunt (1994), or the circular communication model by Schramm & Osgood (1954)) and there are many constructs set up to measure communication, trust, and commitment in qualitative empirical research in various other contexts. The target of this study is to learn about and question the background of the constructs. Therefore, it makes sense to apply qualitative content analysis in which the meaning of qualitative material is systematically classified using a coding frame (Schreier, 2012). Qualitative content analysis can combine both inductive elements, derived from the underlying data, and deductive elements, fed by theories, to bring out manifest and latent meanings of the analyzed documents (Döring & Bortz, 2016). Against the background of prior research on communication, trust, and commitment it makes sense to proceed deductively while setting up the initial coding frame, but to include inductive elements while developing the codes during the analysis. This led to adopting the qualitative text analysis by Kuckartz (2014).

Adapted from Rädiker & Kuckartz (2020) the analysis of the structured interviews with the bankers was effected in six steps.

1. Transcription of the interviews.
2. Setting up of categories for initial analysis deducted from prior research.
3. Basic coding of content.
4. Modification of codes and coding.
5. Analysis of the coded data.
6. Summarizing evaluation of the main aspects that were mentioned by the bankers on communication, trust, and commitment.

Semi-structured interviews were made with 18 corporate bankers of banks that are located in Germany between July and November 2021. The clients that are covered by these bankers range from small and medium sized enterprises (SME) to multinational groups and represent the entire range of corporates in Germany. All types of banks (commercial banks, cooperative banks, and one savings bank) are part of this study. The balanced selection of the interviewees, also with regard of their seniority (from junior banker to board member), aimed to obtain as comprehensive a picture of the bankers' perception of the key constituents of good communication of their corporate clients and their view on trust and commitment to that relationship as possible. The interviews were based on a catalogue of questions that were prepared before the start of the interview sessions.

3. Perception of Good Communication of Corporate Clients by Their Bankers

The targeted level of communication with their clients that bankers perceive as excellent can be described as a constant strategic dialogue with their client about how the company is positioning itself for the future. A precondition is that the banker as well as his/her counterpart in the company are willing and able to have to an exchange at eye level. If the mutual exchange of information is that intense that the banker is accepted by his/her corporate client as a sparring partner, a particularly trusting level of communication is achieved. As can be seen in Figure 8.1, the bankers mentioned various categories of attributes in their interviews that promote strategic dialogue with their client. These attributes are either related to the characteristics of the communication (quality of information and characteristics of communication process), the client's communication strategy, or the communicating representative of the company (abilities and intentions).

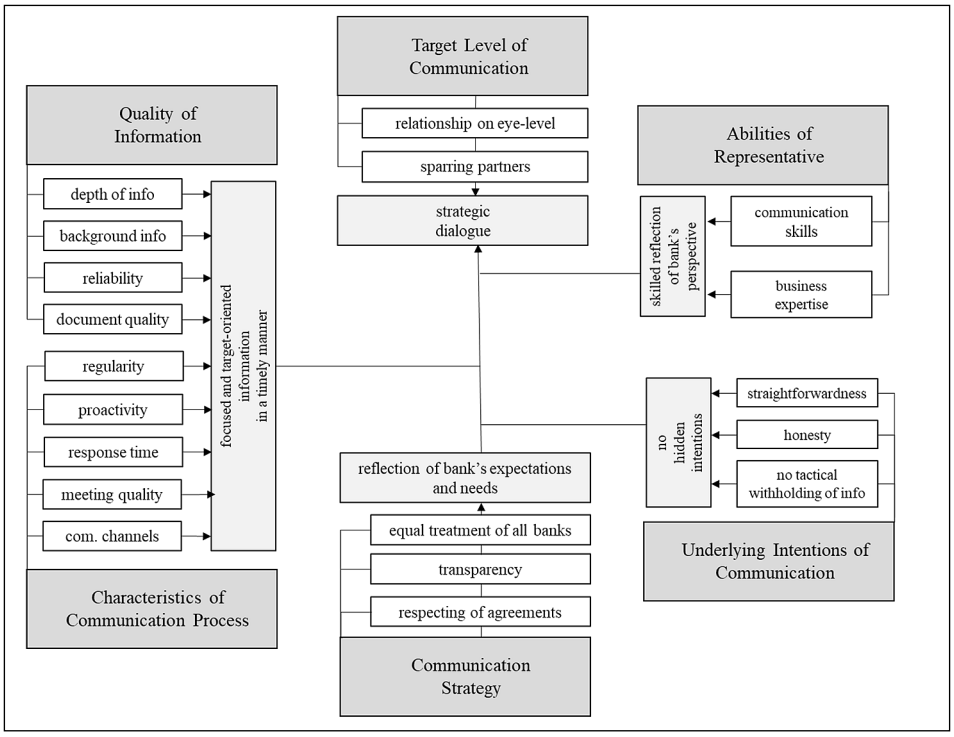

Figure 8.1. Constituents of communication perceived as good by bankers
Source: Figure created by the author.

The perceived quality of information depends on the depth of information. Good communication means that the background information and context of certain topics are given that go beyond a pure "need-to-know" information policy. The banker must have the impression that the information given is reliable and is not subject to permanent adjustments. This implies that the documents and records submitted to the bank must be of high (content) quality.

The main characteristic of the communication process of a corporate client that helps to have good communication with the banker is the regular and professional use of all communication channels. In this context communication continuity of the bank's contacts supports the stringent and trustful communication from the bankers' perspective. It is expected by the bankers that meetings should be well prepared, with all useful and appropriate information and documents. The information should be given proactively, communication should be regular and at sufficient time intervals. The response time to questions should be adequate, especially as the banker often needs the information to advocate for his/her client in internal decision-making processes with other departments.

Bankers expect an excellent communication strategy by their clients. There should be a certain coherence and rigor in the company's communication. Communication must therefore ensure that the bankers feel that the company creates a transparent view about itself. Therefore the information given must be reliable and formal as well as informal agreements must be adhered to. Information should be provided equally to all banking partners and banks should not be played off against each other by providing different levels of information to different bank partners.

Good communication should be grounded on the ability of the counterpart. The representative of the company should therefore have good expertise regarding the company's business and insight into its business environment. He/she should also understand the bank's expectations and (regulatory) requirements. In addition to the professional know-how, individual communication skills are also important personal prerequisites for good corporate communication perceived by the banker. While preparing the discussion or addressing issues the communicator should also put her/himself in the banker's perspective to make sure that all relevant information is provided.

Good communication must signal the bankers that there aren't any hidden intentions. The bankers expect honesty, straightforwardness and reliability, which implies that no relevant information is withheld as part of negotiation tactics. A longstanding relationship helps the banker to assess the information provided by the client against the background of previous experiences.

In essence good communication perceived by the banker is focused, target-oriented, and without delay. It reflects the banker's and bank's needs. The person who is communicating is skilled, is also reflecting the bank's perspective, and does not have hidden intentions. Good communication means that the banker has the impression that with the information he/she received he/she is able to stand up for the client in internal processes. Bankers stress that good communication has a significant impact on the rating of a company by the bank as during rating processes many soft facts that especially rely on good communication, are assessed.

4. Perception of Trust of a Banker in the Corporate Client

According to the interviewed bankers trust in their corporate clients depends on the trust in the representatives of the client. The bankers stress the basic elements of trustworthiness of a person that impact the character of their relationship with the client. As figure 8.2 shows, this leads to fundamental confidence in an appropriate future behavior of the company. The trust in the company is reinforced by past experiences with company and by the way the communication of the corporate client is perceived by the banker.

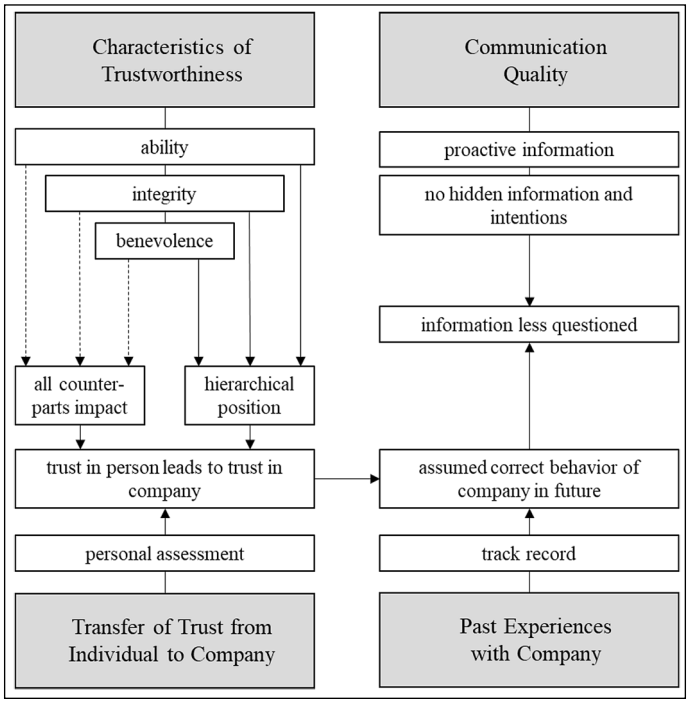

Figure 8.2. Drivers behind the development of trust placed by a banker in a corporate client
Source: Figure created by the author.

The bankers refer to the core characteristics of trustworthiness when they describe a representative of a company with which they have a trustful relationship. Their perception can be summarized by the terms that are set out in literature by Mayer et al. (1995) who distinguish between ability, integrity, and benevolence. The banker's trust in the company's general ability to stay in the market in the future is grounded in the banker's opinion about the skills and competencies of the company's management. Regarding the bankers' trust in the integrity of the company, they again draw the transfer from the company's management, which should ultimately stand for the adherence of a principle-based normative leadership with a good corporate governance. As corporate banking is seen as peoples' business benevolence of the contact partners is also crucial, with attributes like loyalty and commitment being transferred from the contact person on the company by the bankers.

As the relationship to a corporate client consists of several layers of contacts on different hierarchical levels, all contacts involved must be trustworthy to establish an overall trusting relationship with the company. However, the higher the hierarchical level of the person, the stronger the trust in what is communicated, because the higher-ranking person is also assumed by the bankers to have significantly better assertiveness and deeper insights into the strategic positioning of his/her company. It is also helpful for the trust in a company (at least in the case of small and medium-sized companies) if there is trusting contact with the owner of the company.

Trust needs a certain track record in the relationship with the corporate client as the expected future behavior is also derived from past experiences with the company. Combined with the banker's confidence in the persons who represent the company he/she develops expectations of future behavior of the company in certain situations. If his/her expectations are positive, the banker first assumes that there is a high quality of communication, meaning that correct information is provided and what is provided is questioned less. It is assumed that there is no „tactical" behavior on the part of the corporate client, i.e., no concealment of information and that what is addressed is also of actual relevance for the company. A trusted company is expected to share all material information with the bank ad hoc on its own initiative.

5. Commitment of Bankers to the Relationship with the Corporate Client

The commitment of a banker for the corporate client depends on the one hand on the prerequisites that the company offers for a banker's commitment and on the other hand on the contact person's prerequisites. The extent to which

these conditions are fulfilled set the ground for the intensity of the relationship commitment. According to the interviewed bankers a committed relationship is characterized by special dedication of the banker, intense communication with the corporate client, as well as appropriate pricing and a certain level of participation of the client (see figure 8.3).

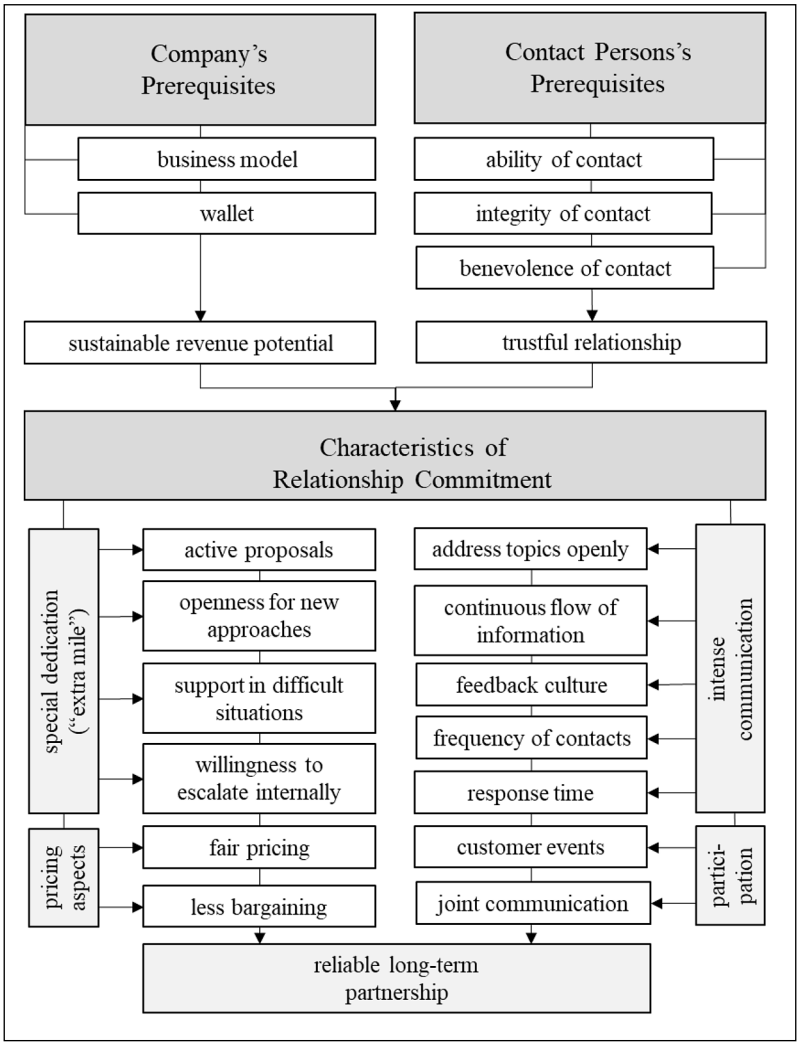

Figure 8.3. Prerequisites and characteristics of relationship commitment from a banker's perspective
Source: Figure created by the author.

The company's prerequisites for the banker's commitment basically refer to the conviction that the company provides sustainable revenue potential for the bank in the future. Therefore, the bankers see a correlation between the company's

wallet and their own commitment. The house bank status is usually connected with a large share of wallet and good expectations for business opportunities in the future and consequently often regarded as a good indicator for a relationship that is characterized by commitment. However, if the business model is not convincing and sustainable, the banker's commitment will shrink.

From the angle of the contact person's prerequisites again the core aspects of trustworthiness were mentioned. The trust in the ability, the integrity, and the benevolence of the contact persons causes the banker to show special commitment to his/her corporate client. A trustful relationship enables the banker to represent the connection internally in the bank with much more conviction. Commitment is promoted by mutual appreciation and a relationship on a level playing field.

The resulting characteristics of relationship commitment that were described by the bankers all tend to establish a long-term partnership. One important aspect is the willingness of the banker to go further than necessary to ensure that a reasonable solution for the client's request is actually implemented by the bank. To achieve a positive decision for the client in an internal approval process, the banker is more willing to go into an escalation process within the bank. In difficult economic situations of a company, committed bankers search for solutions more intensively than they would for other companies. In a committed atmosphere the banker actively makes innovative proposals and is willing to engage in new, complex joint projects with the client. If they are committed, bankers intend to negotiate prices that are fair from both negotiating partners' perspectives. It is often honored with the banker's commitment if the corporate client has not behaved opportunistically in negotiations in the past (e.g., not being a pure price-buyer of bank services). Bargaining is reduced as only serious offers are put on the table.

With a positive relationship bankers feel that it is much easier for them to address issues openly. Committed bankers disclose more of the bank's assessments and the status of internal processes. They therefore inform about internal problems regarding an intended agreement with the client in an open and timely manner. They intend to have a higher frequency of formal and informal contacts. The response time is better than in relationships that are not characterized by commitment. The committed banker's self-perception is that he/she establishes a continuous flow of information to the client about every relevant aspect of the relationship and current issues. If there is a commitment to the client, there is a feedback culture, regarding not only the economic development of the company but also about how the company's behavior is perceived by the bank.

Commitment to a client also includes appraisal of the client. This is shown by the invitation to customer events and the participation of senior representatives of the bank in events with clients. However, this is increasingly subject to compliance restrictions by both the company and the bank. In a committed relationship joint success is communicated externally, also to express the good relationship. (Large) customers are invited to the bank's customer committees like for example the bank's advisory board. A committed banker is willing to share his/her contacts with the client if this might be helpful for his/her client.

6. Conclusion, Limitations and Future Research

This study has made the drivers behind three constructs that are fundamental to a relationship in corporate banking transparent from the perspective of a corporate banker. Bankers' perceptions of communication, trust, and commitment could be described systematically and the drivers behind these constructs could be categorized. This can help to better validate constructs of communication, trust, and commitment against the context that bankers give to these terms. Furthermore, the findings also help to raise awareness in practice of how to design good communication with the bank as a company and what impact a banker's trust can have for their own business. The many overlaps in the statements underline the close connection that bankers see between these constructs. The influence of good communication on the development of trust and the effect of communication and trust on commitment became obvious.

This study does not elaborate on the theoretical background of the constructs in detail, nor does it explicitly use items that have been used in other studies to measure constructs. It will be a good extension of this study to make explicit comparisons of the items used in existing quantitative (measurement) models with the statements of the qualitative interviews. It is also interesting to conduct the same study asking the corporates about their perception of good communication with the bank, what they see as the bank's trust in their company, and what they define as commitment of their bank and mirror that against the results of this study.

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Chapter 9

Exploratory Research of Business Analyst Role in Business Organizations

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Krzysztof Borodako, Piotr Sedlak

1. Introduction

The Business Analyst (BA) role is still unknown to the general public and ambiguous to many professionals and organizations despite being one of the most sought-after roles in recent years (White, 2018). Due to the rapid technological progress and increased complexity of the business processes the need for professional Business Analysts has been growing exponentially (Kosarenko, 2019). The role of the Business Analyst is on the rise and the business analysis discipline is at a critical point in its development (Paul & Cadle, 2020). In today's business world of transformation and optimization of business activity, the Business Analyst plays a leading role in identifying business needs and helping to find the best fitting solution (Gobov et al., 2020). The modern BA presents new abilities and is able to deal with the real-world problems and pain points of the organization by breaking them down, identifying interdependencies, and recommending solutions (Wijetunge, 2021).

However, the biggest point of contention still appears to be the definition of the role as a Business Analyst is an umbrella term (Forbes, 2022). 'Although the International Institute of Business Analysis (IIBA) has done a good job of defining the skill set a Business Analyst needs, the biggest problem is still that the role and responsibilities of BAs vary so widely amongst different organizations that a single level of expectation or judgment does not exist' (McKinley, 2022).

The International Institute of Business Analysis (IIBA®) defined a business analysis standard and main areas of responsibilities. Business analysis is described as 'the practice of enabling change in an organizational context, by defining needs and recommending solutions that deliver value to stakeholders' (IIBA®, 2023)

and a Business Analyst could be any person who performs business analysis activities, no matter what the job title. Furthermore, according to the Guide to Business Analysis Body of Knowledge (BABOK® Guide, 2015) a Business Analyst is a person responsible for identifying the business needs of their clients and stakeholders to establish solutions to business problems. Shah (2017) provides a more concise definition of the BA role, stating that a Business Analyst connects the business, design, and IT teams. In spite of the introduction of the business analysis standard and an explicit definition of the Business Analyst role, there are still varying levels of understanding in various business organizations.

2. Research Methodology

The qualitative research methods were adapted to explore the role of the Business Analyst in detail to understand challenges and formulate predictions about the future of the profession. The aim was to gain a deeper understanding of the role from various individuals, while acknowledging that qualitative data may be subjective.

A purposeful sampling was used to select information-rich cases that constituted a 'BA group' for the research purpose. The research was based on the assumption that a Business Analyst is a person who performs business analysis activities, regardless of their job title or position in the organization. To learn more about the BA role in various business organizations, only one BA per organization was allowed to participate in the research. The BA group consisted of professionals who had worked as a Business Analyst in the last 5 years. The sample size was 16 individuals.

The research strategy employed a two-step approach to gather information from professional Business Analysts from various business organizations.

2.1. Survey

To get a deeper insight into the sample group of BAs and set direction for the interview, an on-line survey was conducted. The survey contained 14 questions that were a blend of closed, open-ended, multiple choice, and rating-scale questions that were basic in nature. The goal was to learn more about the BAs professional background and the role they play as BAs in the business organizations. The outcome of the survey helped in getting a thorough understanding of the sample group of Business Analysts and provided direction for the individual interviews.

2.2. *Semi-Structured Interview*

Semi-structured interviews were conducted as this type of the interview allowed the BA to bring up new themes. The interviews were held according to earlier prepared interview script. The set of open-ended questions were carefully formulated to align with the goals of the research and consider the results of the survey. Follow-up questions were asked during the interview, depending on the answers from the survey and the work experience of the interviewee. In total, 16 semi-structured interviews were conducted using Microsoft Teams. The researchers made a decision concerning the number of interviews looking for data saturation.

The interview results were anonymized in accordance with the General Data Protection Regulation (GDPR). All Business Analysts who participated in the research were assigned pseudonyms, which means that any personally identifiable information was amended in a way that no direct identification based on these data is possible.

3. Key Results

3.1. Business Analyst Role Definition in Various Organizations

The research revealed a broad range of definitions and characteristics of the Business Analyst role across business organizations (Figure 9.1) that translated into a variety of interpretations of the role.

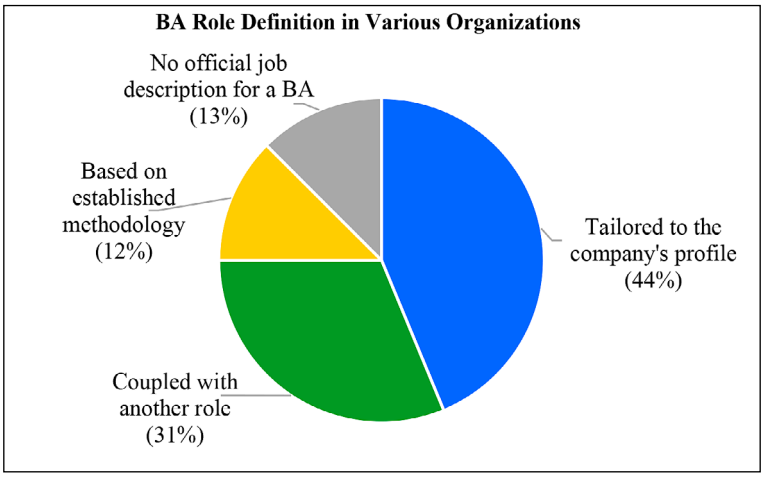

Figure 9.1. BA role definition in various organizations

Source: own work.

The Business Analysts in the sample group stated that in the organizations they currently work, the BA role definitions are:

- Tailored to the company's profile.

In practice, Business Analyst tasks are always subordinate to the specific priorities set by the company's strategies. Thomas stated that 'the requirements for the job position differ depending on the starting point. For example, if you start from the specification, BABOK guide, or formal BA job description. The role of business analysts in each organization is a combination of one or more of these definitions'.

- Coupled with another role.

In the survey, the second largest group of respondents were BAs who held multiple roles in their organizations. These Business Analyst performed tasks in addition to other, non-BA-related duties. In these business organizations, the BA role is seen as a complementary function, and it is generally accepted as such.

- Based on established methodology.

Only two interviewees stated that their BA role is based on an established methodology. In these organizations, the field of business analysis is clearly defined, and the BA role always takes into account the core concepts model presented in BABOK, which defines the business analysis practice.

- There is no official job description.

Two of the interviewees (Victoria and Anna) stated that there is no official job title or job description for the Business Analyst role in their organizations. These individuals perform BA duties but have other job titles and job descriptions that did not correspond with their actual responsibilities. Most of the interviewed BAs had a job description, but it was either general or included responsibilities from other functions, such as a Project Manager or a Product Owner.

3.2. Business Analysts Under Different Job Titles

In the BA sample group, there were many Business Analysts who performed the duties of BA under different job titles. Some of the BA told us that a 'business analysis' is not about the job title as they have never had a 'pure' BA job title or in some cases did not realize that the work they have been doing for years belongs to the Business Analyst profession. Moreover, oftentimes the Business Analysts performed commonly accepted BA duties under different job titles.

Additionally, many of the interviewed Business Analysts carried out business analysis activities, although officially they were designated for a different role,

such as Project Manager, Product Owner, Delivery Manager, or Solution Architect. David said, *'For me the PO and BA roles are very flexible and interchangeable'.*

The table 9.1 summarizes the job titles assigned to the interviewed BAs other than Business Analysts throughout their years of work.

Table 9.1. List of job titles held by professionals with BA responsibilities

No.	Identifier	Experience*	Other titles
1	BA1	20/10	IT Project Manager, Quality Officer, Process Expert, Software Developer, Software Engineer.
2	BA2	6/2	Business Development Manager, Implementation Analyst, New Business Specialist.
3	BA3	13/2	Systems Development Coordinator, Senior Customer Service Specialist.
4	BA4	16/4	Implementation Specialist, Specialist for IT Support and Business Processes.
5	BA5	15/1	Associate Business Information Analyst, Product Management Consultant, Business Intelligence Consultant.
6	BA6	11/2	Web Developer.
7	BA7	15/3	Project Manager.
8	BA8	20/15	Consultant, Project Manager.
9	BA9	18/8	Quality Engineer, Product Owner, Project Manager, Programmer.
10	BA10	12/6	Technical Product Owner, Lead Business Analyst / Delivery Manager, Senior Business Analyst, IT Business Analyst, Business/Data Analyst, IT Risk Management Consultant.
11	BA11	19/8	Systems and Business Analyst, IT Analyst, IT Solution Architect, Systems Administrator.
12	BA12	22/4	Product Owner, Enterprise Product Manager, IT Manager, System Engineer.
13	BA13	8/1.5	Finance and Accounting Process Specialist, Senior Administrator.
14	BA14	18/11	BI Product Owner, Business Solution Architect, Programmer.
15	BA15	15/3	Advanced Analytics Manager, Credit Analytics Lead, Senior Risk Analyst.
16	BA16	10/2	Analyst / Designer, Database Programmer, Programmer.

* Total years of work experience/Work experience in the BA role.

Source: own work. Based on data delivered from surveys and interviews conducted within the BA group.

It is noteworthy that some BAs attempted to adjust their job titles and/or job descriptions to reflect their actual duties. However, due to numerous factors, such

as internal HR processes, this was not always possible. For example, one BA was officially hired as an IT Support and Business Processes Specialist. The organization had limited understanding of the BA role at the time of hiring and found it unusual to change the job title for hiring purposes. Michael said, *'My job description is not adequate to the position. It was written by people who do not know how software is developed or IT projects are run. My official title is IT Support and Business Processes Specialist, but I am doing business analysis and a proper title would be Business Analyst.'*

What makes a Business Analyst role even more challenging to define is the BAs involvement in various areas across different level of projects and processes. The lack of a clear-cut definition of what BAs are accountable for within the organization leads to misunderstanding of the BA role. As Veronica, said, *'Business thinks I'm IT, IT thinks – I'm business.'* This highlights the challenge that BAs face in bridging the gap between the business and IT worlds. The organization needs someone who can understand different aspects of work and facilitate effective collaboration between individual key stakeholders, diverse interest groups, and particular teams. For example, Julia said that there is a BA position in her company because *'there was no person to connect the world of business with the world of IT.'* Victoria said, *'in general, the overall role understanding is still weak on the market.'* However, most interviewees also highlighted that the responsibilities of BAs are currently clearer than in the past.

3.3. Business Analyst Role Misconception

The ambiguity of the Business Analyst job title and position description has led to a misunderstanding of the role. This misunderstanding is widespread, as evidenced by the range of responses from interviewees. Some BAs reported that they frequently encounter people who do not understand or misinterpret their role, while others said that mostly they were in such situations when they started working with someone new. A few BAs said that their role has never been misunderstood (Figure 9.2).

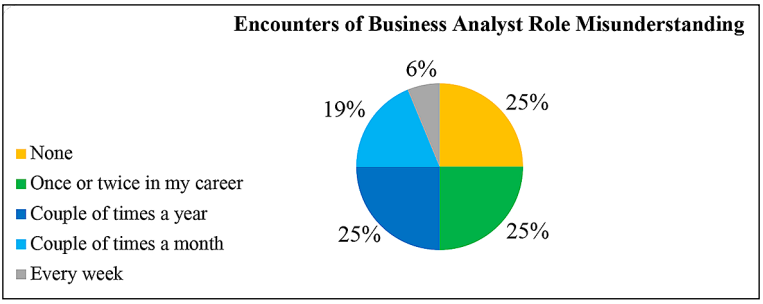

Figure 9.2. Misunderstanding of the Business Analyst role
Source: own work.

High Misconception of the Business Analyst Role

One contributing factor to the Business Analyst role ambiguity is that professionals who practice a BA role usually come from different backgrounds and present a diverse skill set. And that in consequence makes it difficult to quantify the role. Elisabeth said, *'One can be a Requirements Engineer, one can be a Tester, a Quality Assurance Manager, an Agile Coach, or a Scrum Master. Or maybe even someone who doesn't fall into these categories (…) People usually don't know what the Business Analysts do, because we can do so many things.'*

The inconsistent interpretation of the Business Analyst role can lead to BAs being called in to perform tasks that are generally outside of their responsibilities. It proves that that other functions within the organizations attribute certain tasks to the BA and have a blurred understanding of BA responsibilities. Julia said, *'It is unclear, so to speak, where the work of a BA begins and where it ends.* Anna explained, *'I just have the impression that everybody puts a somewhat different meaning to that. '*

The BAs stated that the misconception of the BA role is greater in the organizations that have just introduced the role, compared to organizations where the role is already more established. Julia said, *'The concept of a Business Analyst is not fully known in my organization. My job is 80% of the BA role, but this is a new position in my company and for many people this is abstract.'* Moreover, the move from the Waterfall to Agile methodology has also contributed to the confusion about the BA role. Stefan said, '*With the agile thinking and methodologies, there is a misconception that there is no need for a Business Analyst. Our role is continually downplayed.'* That in turn led to questioning the role and place of the Business Analyst within the organization.

Moderate Misconception of the Business Analyst Role

Some Business Analysts build solutions for external clients who do not have experience working with BAs and are not sure what BAs are responsible for. Therefore, these BAs were explaining their responsibilities on the project during the first meeting with the client. Alexander said, *'My external clients do not know much about the role of the Business Analyst'*. Another Senior BA confirmed *'I think that it is clear what the BA does and what for example a Developer does on the IT project. But when I go to an external client who does not know much about software development then I usually need to explain what my role is in the project'*.

Low Misconception of the Business Analyst Role

The BA role is much better understood within organizations where it has been present for a longer time and it is strongly positioned. This applies to larger organizations where BAs have had the opportunity to work with multiple teams and everyone has become familiar with the BA role. David said, *'I don't understand what the problem is. This is a specific role to turn business needs into requirements and describe what the system should do to support it. In the teams I have worked, there was no misunderstanding about the role. People simply knew who was responsible for what.'* Furthermore, there is no confusion about the BA responsibilities while working with external clients, who are represented by their own BA. In this case, each BA represent the interests of the organization they work for, and cooperation between both organizations is between Business Analysts.

3.4. Business Analyst Responsibilities

The Business Analysts represented diverse business organizations with various needs and expectations for a Business Analyst role. However, there were a few core competencies that were consistent across the group as the quintessence of the BA work that was to elict requirements and prepare product requirements specification.

The interviewed BAs are responsible for the following duties:

- Eliciting, documenting and managing business requirements,
- Bringing together stakeholders and acting as a liaison point between various functions or organizational units,
- Analyzing and synthesizing input from 'the business',
- Investigating and specifying processes, functions, and information flows,
- Modelling business processes, As-Is state' versus 'To-Be state' of the organization,
- Developing various scenarios and recommendations,

- Facilitating product implementation,
- Assessing the value created by the solution (Return On Investment (ROI).

In general, Business Analysts are responsible for the business analysis process by taking the requirements from beginning to end, as BAs are involved from the concept phase of a specific project or process until the final product delivery. In particular the BAs are in charge of understanding and analysing business needs and translating them in understandable terms to other teams that also include highly technical professionals. All interviewed BAs admitted that their work effectiveness and project success to a great extent depend on whether or not they were involved in a project from the very beginning. '*BA should participate in the implementation of new ideas, new functionalities, new processes, immediately with people from the business side who are responsible for the implementation of this idea in order to be already at the design stage and come up with a certain concept of how we want to implement it. And here is the big role of BA*' according to David. Lucas said, *'You need to tell the development team what they need to do, and you are there to solve the problems. You need to unblock the team and help them to go faster'.*

It should be kept in mind that specific business organizations might assign some additional or tailored responsibilities to BAs that reflects the industry type. Moreover, each BA performs tasks associated with the assigned project, the project life cycle, the number and type of stakeholders involved, and applied methodology. Lucas said, '*I think that sometimes people don't feel the weight of BA's responsibility. How much responsibility the BA has. And I feel that this is sad because it hurts everybody in the project'.* Business analysis efforts are as unique as the projects they support.

4. Conclusion

The findings of the study indicate that the role of a Business Analyst is defined differently in various organizations. The BA role is often tailored to the company's profile or coupled with another role. The BA role is influenced by the specific business needs and goals of each organization, although the core responsibilities of BAs are often similar. Moreover, the research suggests that one contributing factor to the misunderstanding of the role of a Business Analyst is that many BAs had different job titles, their job description did not always reflect the performed responsibilities, or business analysis activities were performed unofficially.

The greatest misconception of the BA role, as well as the weakest role boundaries, are found in organizations that have recently introduced the role and the role is still maturing. The research also showed that one of the factors contributing

to the role ambiguity are BAs themselves as they come from different backgrounds and demonstrate diverse skill sets, from highly technical to more humanistic in nature proving that there is no one-size-fits-all approach to the role. This in turn influences the areas the BA might get involved in and contributes to the blurred image.

Moreover, the move from Waterfall to Agile has not strengthened the role but has done the opposite by not defining it in the Scrum Guide (Schwaber & Sutherland, 2020). The research also proved that the Business Analyst job title along with a job description does not reflect the performed responsibilities.

By contrast, according to the research, the BA role is much better understood in the IT world, although in some cases with the baggage of the image from the past of someone who is producing lengthy documentation. The research made visible the difference between greater understanding of the BA role in software development projects and low understanding for non-IT professionals.

The conducted research also has some limitations that are also worth mentioning. While the specificity of people performing BA tasks is specific to international (but not exclusively) corporations, the above research is based on material from only one country. Another limitation of this study is the adopted simplification of the research framework, which allows for capturing the most important features of BA in the organization and could contribute to further in-depth research. Based on the grounded theory, the authors are also aware of the limitation resulting from the origin of empirical material from only one source. Certainly, expanding this material with industry publications, company data, and market statistics could give a more complete picture of the activities of professionals in the role of BA.

These limitations can also be treated as future directions for further research on the topic of business analysis. Researching other geographic markets would allow comparing the obtained results. Also, enriching the material with other cognitively valuable sources of information would give a better understanding of BA in business practice. It is also worth getting to know the BA's role in managing stakeholders in projects more fully, which role can be of multifaceted importance for the success of the project.

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Chapter 10

Effects of Gamification on Behavioral Change in Knowledge Transfer[1]

Bogusz Mikuła, Aleksandra Witoszek-Kubicka

1. Introduction

Workplace gamification is a relatively new approach to affect employee's behaviors, especially in terms of knowledge management. Nevertheless, in recent years, there has been growing interest in the use of game-like elements, such as points, badges, and leaderboards, to incentivize specific behaviors and improve workplace productivity. Particularly interesting seems to be the concept of using gamification to motivate employees to undertake behaviors constituting knowledge transfer. Such implementation does not pose the typical risks of employee-directed gamification, such as exploitationware. What is more, it can potentially solve the problem with motivating employees to undertake activities that constitute knowledge transfer, which is widely discussed in the literature. The aim of the study is to identify the impact of gamification on the formation of desired behaviors in the area of knowledge transfer. For this purpose systematic review of the empirical papers was conducted using the PRISMA protocol. To facilitate the purpose of the ongoing considerations, it is essential to clarify the nature of two main variables: gamification and knowledge transfer.

2. Gamification in Organizational Contexts: Exploring Effectiveness and Implementation Principles

Gamification is rapidly developing as a subject of implementation in organizations and as a research topic. It is maturing from basic and fundamental questions such as what, and why to gamify, to questions about how to gamify, when

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to implement gamification projects, and when not to. Research in the field of gamification still faces theoretical and empirical challenges to confirm the effectiveness of solutions based on game elements and to consolidate principles according to which gamification can be implemented (Trinidad et al., 2021). The available literature indicates that gamification can have positive effects in various domains, including education (Hanus & Fox, 2015) and energy conservation (Johnson et al., 2017). Scholars have also emphasized the potential of gamification in several organizational areas, such as marketing and customer engagement (Eisingerich et al., 2019). Nonetheless, there is limited research that specifically addresses the role of gamification in knowledge management (Oppong-Tawiah et al., 2020). Gamification is a relatively new approach to influence the behavior of employees or customers. However, in recent years, there has been an increasing interest in incorporating game-like elements, such as points, badges, and leaderboards, to incentivize specific behaviors and enhance workplace productivity. Nevertheless, some studies suggest that gamification may result in unintended consequences, such as increased stress, excessive participation, and demotivation. It is worth noting that the implementation of internal gamification in an organization entails potential risks that differ from those of projects related to education or health, including employee manipulation, mandatory participation, or reduced workplace safety (Friedrich et al., 2020).

The authors assume that gamification is the use of game elements as a system of motivational stimuli for the target group to engage in desired behaviors, which are necessary to achieve the goals of the project (Witoszek-Kubicka, 2020).

Gamification is most commonly classified as a persuasive technology, and the actions taken within its framework have direct consequences in the real world. However, structurally, the design of such solutions is based in the area of game design and is subject to similar rules. In the literature, game design models can be identified, which are also the basis for creating gamification solutions (Zichermann & Cunningham, 2012). One of the most commonly used approaches is designing based on the MDA model, which consists of Mechanics, Dynamics, and Aesthetics of the game. The authors of this approach explain mechanics as a description of the individual elements of the game, at the level of data representation and algorithms. Dynamics describe the interactions between the user and the mechanics, and between users themselves. Aesthetics describe the desired emotional responses evoked in the player when they interact with the game (Hunicke et al., 2004). Gamification aims to change user behavior, such as increasing the frequency of their knowledge transfer-related actions. Therefore, the dynamics of the gamification solution created by its design elements are significant. Replacing one element with another, such as swapping a level for a leaderboard, can have positive, negative, or no effect on the user's motivation to continue playing, and thus achieving the project's intended goals (Hamari & Koivisto, 2015).

3. Knowledge Transfer: an Essential Process for the Development of Human Capital in Organizations

Knowledge transfer is one of the fundamental and key processes involving knowledge within and between organizations and their environment. It is the enabling factor that allows individuals to perform various knowledge-related activities such as identifying, gathering, selecting, recording, storing, evaluating, combining, creating, and applying knowledge. It facilitates the utilization of a given knowledge resource in multiple locations simultaneously, wherever it is necessary for action.

Knowledge transfer can be viewed in two ways. Knowledge can be transferred by changing the knowledge resources in a different location. An example of this is transferring an employee to another team or unit, which modifies the overall personalized knowledge resource of the working group in that particular location. Similarly, technology can be transferred, and procedures can be transported from one organization to another (Argote & Ingram, 2000). On the other hand, knowledge grounded in a product can be transported from one place to another.

The second perspective on knowledge transfer sees it as the movement of knowledge resources from one unit (human, organizational, or machine) to another. In this approach, knowledge transfer is defined as „the process through which one unit (e.g., group, department, or division) is affected by the experience of another" (Argote & Ingram, 2000, p. 151). In other words, it is „a process of exchange of explicit or tacit knowledge between two agents, during which one agent purposefully receives and uses the knowledge provided by another. 'Agent' can refer to an individual, a team, an organizational unit, the organization itself, or a cluster of organizations" (Ajith Kumar & Ganesh, 2009, p. 163).

Explicit knowledge residing in human minds is transferred among individuals through informational and communicational processes. Explicit knowledge is subject to codification and can be recorded on various media, such as electronic devices, thereby assuming a codified form. In such cases, its transfer between individuals can be accomplished using computer networks or other methods of information transmission, and even in the traditional manner through the transport of paper documents (Mikuła, 2011). This type of knowledge can be distributed (flowing towards specific individuals or access points), acquired (individuals receiving knowledge from others or from access points such as databases or email inboxes), and disseminated (knowledge from a specific knowledge resource being made publicly accessible, e.g., by posting it on a website). Explicit personal knowledge can also be transferred in the form of messages within the informational process (distributing, acquiring, and disseminating). However,

the feedback, if it occurs, may be delayed in time. For example, it could involve a manager issuing a command and a subordinate receiving it, or a company president delivering a public statement on television. The communication process is the essence of knowledge sharing. It involves mutual exchange of knowledge with the possibility of acquiring knowledge, posing questions to the person providing it, and receiving supplementary answers. Knowledge sharing allows for obtaining the most comprehensive knowledge resource based on the willingness of the knowledge provider. The model of knowledge transfer processes in the framework of distributing, acquiring, disseminating, and sharing knowledge is presented in Figure 10.1.

A particular issue is the transfer of tacit knowledge. This specific type of knowledge cannot be transferred using formal language. However, practitioners work with their mentors and learn their craft not through language but through observation, imitation, and practice. In the business environment, on-the-job training is based on the same principle. The key to acquiring tacit knowledge is experience. At the same time, without some form of shared experience, it is extremely difficult for people to share their thought processes. Mere transmission of information often makes little sense if it is detached from the emotions and contexts associated with shared experiences. The process by which tacit knowledge is transferred, as per the Japanese concept of knowledge management, is called socialization. The redundancy of information facilitates the transfer of tacit knowledge (Nonaka, 1994). To describe it more precisely, socialization, which involves transforming tacit knowledge into tacit knowledge, consists of four subprocesses: "the mere accumulation of tacit knowledge, the gathering of social information internal to the organization (also called "wandering inside"), the gathering of social information outside the organization in a broader societal context ("wandering outside"), and finally the transfer of tacit knowledge from the master to the team members" (Nonaka et al., 1994, p. 349). In summary, the transfer of tacit knowledge requires the sharing of experiences through joint actions (Nonaka & Nishiguchi, 2001).

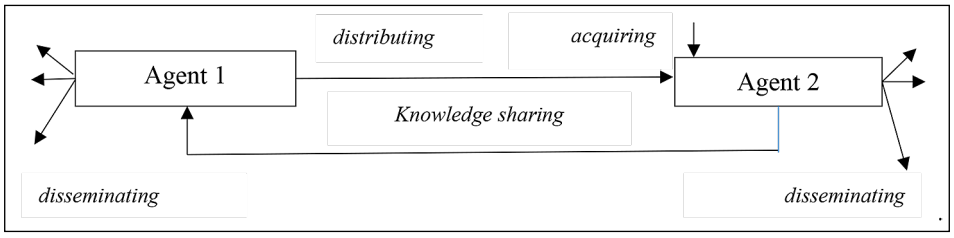

Figure 10.1. The model of knowledge transfer processes

Source: own work.

However, there are exceptions to the rule that tacit knowledge cannot be transferred in a codified form. Codification of tacit knowledge can occur, for example, through the medium of film. For instance, thousands of people acquire cooking skills every day by watching instructional videos on social media platforms. The same method of sharing experiences can be applied within organizations, allowing individuals to watch instructional videos or participate in live broadcasts (such as observing a surgical operation, which is widely practiced) without direct „face-to-face" contact with a master. Additionally, participation in a gamification can be a way to acquire tacit knowledge embedded within it.

Knowledge transfer alters the recipient(s)' knowledge resource. If the modification results in a positive outcome when applying the knowledge, it can be concluded that the development of human capital has occurred.

4. Materials and Methods

4.1. Search Strategy, Procedure and Selection Criteria

Systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA protocol). The search syntax was: gamification AND „knowledge transfer", gamification AND "knowledge diffusion", gamification AND "knowledge sharing". Search was conducted in two bases: Web of Science (WoS) and Scopus. The search was limited to papers in English and Polish. Only open access studies were taken into consideration. The following inclusion criteria were taken into account during the review:

- peer-reviewed articles,
- empirical research,
- gamification elements rather than serious games/games/playful experience,
- knowledge transfer context.

Figure 10.1 displays the steps of identification, screening, eligibility, and inclusion that have been taken according to the PRISMA flow chart. Initially, 56 potential papers on gamification effects on behavioral changes in terms of knowledge transfer were identified. After screening, fourteen duplicate articles were removed. The remaining articles were screened by the title for compliance with the inclusion criteria. After that, another 18 records were removed from consideration because the papers were not related to the knowledge transfer gamification. The remaining papers were screened by the abstract. 5 of them revealed that the article was not relevant to the current study (related to games/serious games) and 1 paper was a review without research part. 10 papers were included in the review (8 records were removed after screening by full text – 4 of them were not empirical and 4 papers were not related to the topics of the research). The final

review was performed considering the need for a full integration of the created inclusion criteria.

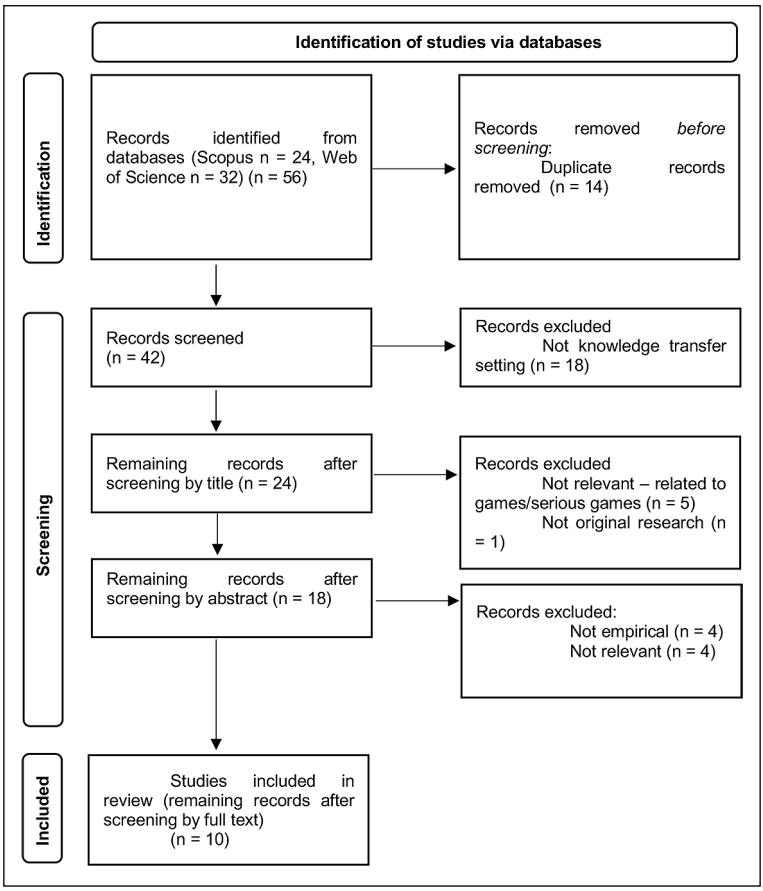

Figure 10.2. PRISMA flow chart

Source: (own work, based on Page et al., 2020).

4.2. Data extraction

Six categories of variables were extracted and coded from each of the papers included in the review: (1) research type, (2) sample size, (3) gamification result (the effect of gamification on the knowledge transfer), (4) knowledge transfer sub-process (acquiring, distributing, disseminating and sharing knowledge), (5) level of knowledge transfer (individual, group, organizational, interorganizational), and (6) dynamics (cooperative, competitive, individual) (Table 10.1).

Table 10.1. Characteristics of gamification projects included in the review

Publication	Research type	Sample size	Gamification result	Knowledge transfer subprocess	Level of knowledge transfer	Dynamics
(Li et al., 2022)	Questionaires	255	Positive	disseminating	interorganizational	individual
(Morschheuser et al., 2017)	Experiment	42 (21 control, 21 treatment)	Positive	acquiring, distributing	Group	cooperative
(Soltani et al., 2021)	semi-structured interviews (acceptance)	15	positive (knowledge transfer attitude)	acquiring, distributing	Individual	individual, cooperative
(Hoffmann, Pfeiffer, 2022).	Experiment	215	Positive	acquiring	interorganizational	individual
(Vasilescu et al., 2014)	case study	3 systems	Positive	acquiring, distributing, disseminating	interorganizational	competitive
(Weretecki et al. 2021)	Questionaires	468	positive	acquiring, distributing	interorganizational	competitive
(Spanellis et al., 2020)	case study, blog analyses, interviews	1 case, 5 interviewees	Positive	acquiring, distributing, sharing knowledge	individual, group, organizational	cooperative
(Zikos et al., 2019)	UX, SUS questionnaire	53	Positive	acquiring, distributing,	individual, group, organizational	individual, cooperative
(Aromaa et al., 2020).	UX, SUS focus group, qualitative questionnaires (acceptance)	9	positive (knowledge transfer attitude)	acquiring, distributing,	individual, group, organizational	individual
(Leite et al., 2022)	qualitative exploratory study (acceptance)	10	Positive	acquiring, distributing, sharing	individual, group, organizational	cooperative

Source: own work based on sources indicated in the table.

5. Results

5.1. General Description

Although the search was not limited in terms of the year of publication, the oldest article found dates back to 2014 (Vasilescu et al., 2014). The majority of the papers were published between 2019 and 2022 (Li et al., 2022; Soltani et al., 2021; Hoffmann & Pfeiffer, 2022; Weretecki et al. 2021; Spanellis et al., 2020; Zikos et al., 2019; Aromaa et al., 2020; Leite et al., 2022). Presented studies were both quantitative and qualitative. Some of them verified the actual impact of gamification interventions on behavioral change in the area of knowledge transfer (Li et al., 2022; Morschheuser et al., 2017; Hoffmann & Pfeiffer, 2022; Vasilescu et al., 2014; Weretecki et al. 2021; Spanellis et al., 2020), while others examined the theoretical acceptance of such solutions (Soltani et al., 2021; Zikos et al., 2019; Aromaa et al., 2020; Leite et al., 2022). All articles indicate a positive impact of gamification on desirable behaviors in the area of knowledge transfer, although they refer to different sub-processes. The vast majority of the scrutinized studies investigated the effects of gamification on knowledge acquisition (9). A smaller subset of articles addressed the process of knowledge distributing (8). Remarkably, only two articles tackled the subject of knowledge sharing and dissemination. Due to differences in understanding of knowledge transfer, sub-processes were proposed, according to the definitions provided earlier, based on descriptions from the reviewed papers.

5.2. Behavioral Change in Terms of Knowledge Transfer

All articles indicate a positive impact of gamification on knowledge transfer behaviors. A potential relationship has been observed between the utilized dynamics and the level of knowledge transfer: competitive dynamics were only present in interorganizational contexts, while within organizations, individual or cooperative dynamics were utilized in projects targeting employees. Few of the reviewed articles provide detailed insights into the changes observed in knowledge transfer behaviors and offer valuable research findings in their respective domains: according to Li et al. (2022), individuals are more inclined to share knowledge with others and exhibit greater loyalty when they receive feedback in the form of comments and likes. Another article suggests that the proposed cooperative dynamics enhance the dissemination of production information in the construction industry by considering the digital inclusion of the target audience and the diffusion of knowledge within work teams (Leite et al., 2022). In one of the articles, the authors indicate that the use of gamification in the context of knowledge transfer can be particularly effective in closed environments,

such as organizations, where knowledge is proprietary and the pool of potential knowledge providers is limited. Moreover, the mentioned differentiation among various groups of community members and the need for different knowledge sharing channels suggest that knowledge communities may prefer to integrate diverse knowledge channels (Vasilescu et al., 2014).

6. Conclusion

The use of gamification in knowledge transfer has received increasing attention in recent years. The studies from the reviewed articles offer some indications for the use of gamification mechanics to motivate desirable behaviors in this area. However, inconsistencies in the understanding of knowledge transfer among different researchers were revealed through the review. Further research is necessary to investigate which gamification dynamics support the occurrence of behaviors within each of the sub-processes of knowledge transfer. To this end, we suggest the adoption of four sub-processes of knowledge transfer (acquiring, distributing, disseminating, and sharing knowledge) in future research, due to their significant differences in terms of desirable behaviors. This understanding can inform the design of effective gamification interventions to promote knowledge transfer.

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Chapter 11

The Relationship Marketing in Polish E-Commerce

Marcin Szplit

1. Introduction

In the 1990s, the change from the concept of marketing and the emphasis on focusing entirely on the customer, meeting his requirements and needs, resulted in a significant extension of the functionality of sales and marketing support systems with additional modules, especially adapted to interactive exchange and information management in the seller–client relationship.

According to the latest ARC Rynek i Opinia survey (https://arc.com.pl/polacy-bardziej-aktywni-w-programach-lojalnosciowych/), at least one loyalty program is used on by 62% of Poles. While this percentage has been on a similar level for several years, the activity of consumers changes within the loyalty program. This is both an opportunity and a threat for companies – to take full advantage of marketing opportunities afforded by loyalty programs, new programs must be consciously built and the existing ones improved.

In the chapter, the author will show the of loyalty programs used by Polish firms in the last couple of years and their influence on relationship marketing.

2. Relationship Marketing

Marketing as a trend in the economic process appeared only in the 1950s in the United States. Its appearance was a combination of many circumstances, the decisive one being the increasing competition. Starting from the 1960s, there were changes in the structure of the market, which in the meantime covered almost all industries and markets, leading to a shift from the seller's market to the consumer's market.

In the classic approach, the evolution of the concept of marketing was presented by characterizing three basic orientations of the functioning of enterprises. These are production, sales, and marketing orientation.

Production orientation. The production mindset is based on the perception that consumers want mass products at low prices. The management concentrates its efforts on achieving high efficiency of production through its mass production, which enables achieving savings. The complement is usually a mass distribution system. This approach is justified when the demand for a product exceeds the supply, or its cost is high in relation to the price that consumers are willing to pay. Examples of such situations can be found in the electronics industry, where the costs of new products are relatively high during their launch, and then, by improving technology and gaining experience it is possible to reduce costs and thus prices, which causes an increase in demand. In this way, a reduction in price revives demand and vice versa. Some service companies also use this method. For example, medical services provided for social insurance are designed to cover as many insured persons as possible. Massiveness is achieved by impersonal treatment of persons covered by benefits. Companies that adhere to such a policy are concerned with constantly improving their products, regardless of market reaction. It may therefore happen that market preferences develop in the opposite direction.

Sales orientation. The sales mindset assumes that consumers will not willingly buy the quantity of the product offered. Companies therefore focus their efforts on aggressive product promotion. There are a great many tools and techniques developed to stimulate purchases. Some of them are effective. These techniques are also common when selling cars during an economic recession.

Marketing orientation. Focus on marketing is an expression of the conviction that the company must identify the needs of consumers and offer products aimed at satisfying them in a more effective and efficient way than competitors (assumptions: identify needs and then satisfy them, produce what you can sell instead of selling what you can produce, or – focus on the consumer instead of the product).

Unlike the sales mindset, which focuses on the needs of the seller, the marketing mindset focuses on the needs of the buyer. The marketing approach is based on four essential elements: market segmentation by understanding customer needs, which are met thanks to coordinated marketing action, ensuring the desired profitability. Market segmentation assumes that a company must distinguish different types of consumers and group them according to preferences. It is increasingly difficult to achieve success when you have only one answer to the entire pyramid of needs. Customer orientation is achieved by analyzing consumer preferences and studying the specifics of the market. The marketing mindset requires coordinated action across the enterprise. Very often there are conflicting interests in individual departments of the company. The sales

department demands high-quality products at low prices, better payment terms, the widest possible catalogue. The production department prefers a limited number of products, and the financial department prefers rigid payment terms and minimization of outlays on working capital. However, there must be a common vision in the enterprise to achieve the main goal. Today, it is to meet the needs of consumers and thus achieve the level of sales necessary to ensure the profitability of the company.

The previously used methods of building a competitive advantage based on the 4P technique (Product, Price, Place, Promotion) began to exhaust their possibilities. As part of the transition of enterprises to a marketing orientation, an increasing role was assigned to the recognition of the situation in the company's environment by means of marketing research. This resulted in the creation of a multi-element marketing structure, which is illustrated in Figure 11.1.

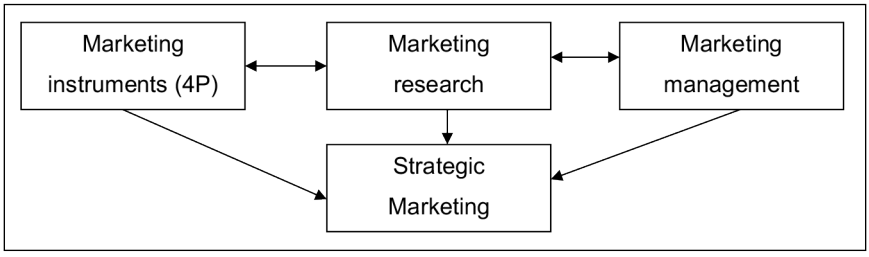

Figure 11.1. Marketing structure

Source: (own elaboration based on Garbarski, Rutkowski & Wrzosek, 2001, p. 31).

At the end of the 1990s, one more element began to be introduced into the image of marketing shaped in this way, namely customer relations. The concept of affiliate marketing emphasizes the management process, i.e., the creation, development, and maintenance of the company's relationships with other entities. It exposes the direct, interactive, bilateral, and multilateral nature of the relationship between the seller and the buyer as well as other entities in the process of creation and delivery of products and services. Currently, this phenomenon, both on the scale of individual countries and on a global scale, continues to intensify. This creates many economic, social, and political tensions, but also gives opportunities to shape innovation. Since the marketing orientation itself and its techniques have already been quite thoroughly presented as a theoretical study, as well as widely used in practice, some researchers, looking for innovation, reject the very concept of marketing. Apart from these slightly extreme opinions, there are many interesting and innovative marketing techniques, including database marketing, which can be considered a precursor to relationship marketing.

Customer loyalty presents a paradox. Many see it as primarily an attitude-based phenomenon that can be influenced significantly by customer relationship management initiatives such as the increasingly popular loyalty and affinity programs. However, empirical research shows that loyalty in competitive repeat-purchase markets is shaped more by the passive acceptance of brands than by strongly held attitudes about them. From this perspective, the demand-enhancing potential of loyalty programs is more limited than might be hoped. Discusses where these programs might work and where they are unlikely to succeed on any large scale. It seems that loyalty programs play the most significant importance in e-commerce.

Maintaining a positive internet reputation for your brand is essential to retain consumer loyalty. Companies may demonstrate to customers that their opinions are valued and that they are striving to deliver the best possible service by requesting and utilising client feedback to enhance their operations (Wiebe, 2015).

The company that provides the most products and services associated with online reputation is also the world's leading provider of such products and services. Internet reputation refers to how others perceive an organisation when they conduct an online search for it. It is likely that your online reputation consists of news stories, blog posts, online entertainment profiles, websites that do persons searches, and publicly available reports. The phenomenon known as "online reputation" refers to the proliferation of association-related online information and commentary. It is separated into the following classes:

- Associations and unauthorised communities maintain websites as official communication channels.
- Channels over which the association has no authority but which it should monitor nonetheless: On numerous venues, including websites, blogs, informal networks, and in-person meetings, any client may voice his opinion towards the association.

Conversations regarding any association and the products or services it provides shape its internet reputation continuously and in every region of the globe. Although constructive criticism is often welcomed, if a negative data reputation spreads across several online platforms, the association may be obliged to deal with the repercussions. Customers that are displeased with the service and competitors will exchange this information. The most troubling aspect of the matter is the possibility that the association is not always aware of such assaults. Thus, it is the responsibility of organisations that are members of associations to monitor what is published about them online. Every association is responsible for controlling its online reputation (Marks, 2010).

Marketing, advertising, and search engines are brought together as complementing components of online reputation management. Online reputation management enables the protection and management of an organization's online reputation by active participation in the outcome of search engine results. The objectives of online reputation management include obtaining high rankings in search engine results and visibility on all websites through the production of high-quality, relevant content. It is possible for the organisation to boost both its visibility and its exposure. As a direct result of this, the association's total internet presence has been boosted. The following measures are necessary for managing your online reputation:

- monitor and observe what is being said online,
- evaluate what the visible data imply about the association's brand and reputation,
- participate in the conversations and silence adversaries.

Any organization is capable of establishing an online reputation; however, not all organisations have already done so. Regarding internet reputation management, anything that a client may post was deemed fair game. It is significant for three reasons: first, the association will collect data reputation; second, the association will have the option to respond; and third, the association will be able to exert control over discussions about itself. With the assistance of online reputation management, an association may be able to increase the number of internet recommendations they receive, improve the results of their marketing campaigns, and free up more time to focus on running their business. Due to the fact that the Internet does not always provide a true picture, the concept of controlling one's online reputation was born, and this is where it comes into play (Chatzkel, 2016).

An effective strategy for controlling one's internet reputation must be based on endorsements from external stakeholders. This is due to the fact that an individual's online reputation is based on how others perceive their affiliations, which makes associations so vital. The following is a list of the major variables that determine the online reputation of each organisation:

Presence: Association must maintain and enhance its online presence, including its entertainment profiles, and ensure that all of its contact information is normally pertinent to its clients.

Online reviews: The association must decide the location of the review site, screen the reviews, and keep a watch-out for emerging patterns in online reviews.

Social media: The association must have a compelling presence on each of the leading virtual entertainment websites by giving information that is generally relevant to its customers (Gaughan, 2011).

Surveying: In order to collect customer input, the association needs to install electronic survey booths.

Analysis: The association is obligated to remain current on any new information and to publish updates on a regular basis.

Benchmarking and Scoring: In order for the Association to get insight into the most effective strategy for strengthening its own online reputation, it must evaluate the extent to which its competitors successfully manage their online reputations (Weaver, 2013).

Local alignment: To correctly align the domains in which its operations are done, the organisation must centrally coordinate the information gathering efforts across all of its operational divisions.

Consumers utilise online resources because they desire a quick and straightforward way to determine whether businesses can be trusted. The management of an association's online reputation should not add to their workload, but rather free up more of their time. Time and money can be saved by affiliations with a high internet reputation through the acquisition of new consumers. If clients do not have to search for a new company in which to place their trust, this may save them time. They get the assurance that their money was used prudently (Zollo, 2017).

3. Loyalty Programs

Loyalty and loyalty programs have been contentious issues amongst marketing academics for many years, yet the business world, and especially the retail industry, has continued to implement loyalty programs at a fast pace with virtually all major retail players having some sort of loyalty program.

Having loyal customers provides the organization with several competitive advantages (Cant & Du Toit, 2012) which can be sited as follows:

- Loyal customers consciously select the organization again and again, thereby reducing the market share of competitors.
- Loyal customers are less price-sensitive and, therefore, will not react to lower price offers from competitors.
- Loyal customers allow the organization the opportunity to match a competitive offering or to correct a service failure before defecting.
- Having loyal customers reduces the marketing costs of acquiring new customers.
- Customer loyalty serves as a deterrent that prevents customers from easily changing to a competitive organization or brand.

62% of Poles use at least one loyalty program on average, with women (64%) using them slightly more often than men (59%) (ARC Rynek i Opinia 2022). The most popular is the Biedronka loyalty program, most often also indicated as a favorite.

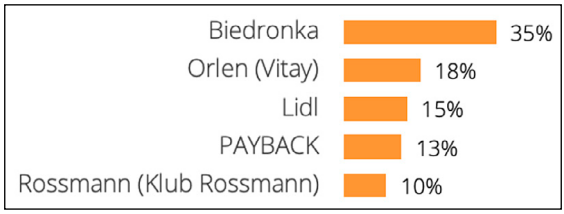

Figure 11.2. Popularity of loyalty programs in 2022
Source: (*ARC Rynek i Opinia*, p. 11).

According to a study by the Inbound Marketing Institute carried out in February2023 by SW Research, Poles show the greatest loyalty to the gasoline station, and the lowest to clothing brands. Almost every Pole has loyalty cards, which does not mean that he uses them.

The temptation arises to attribute a high level of loyalty to the station to loyalty programs, because it was the brands in this category that were the first to introduce them to Poland on a massive scale. This would also be confirmed by declarations of consumers: 40% of respondents mention the loyalty program as a strongly loyal of element. However, possession of loyalty program is not a guarantee of success. Once designed loyalty program which we will not adapt to consumer expectations and the market has no reason to exist. It must evolve. Also discounts as a loyalty tool can become a double-edged sword because in the long term, they weaken the strength of the brand. This opinion is also confirmed by other results of a test. Only 7% of those surveyed do not belong to a loyalty program, which, however, does not mean that they continued to actively use them. Only 40% of respondents declare that they actively draw from the offer of several programs. The rest use them selectively (31%) or even only one of 6 of them (9%) (based on SW Research, 2023).

4. E-commerce and Loyalty

The situation of Polish e-commerce in 2022 was as follows; 87% of Internet users have done their shopping online.

- 96% took pro-purchasing activity on their device.
- 82% of consumers see the benefits of omni-channel shopping.

- 87% of consumers declare that it is important for them that the brand is available in many channels.
- 61% buy the same brands or products across channels. (Source: „Omni-commerce. I buy conveniently" – the report of the Chamber of Electronic Economy, 2022)

Data from the report „E-commerce in Poland during the coronavirus epidemic" indicate that in the first months of the pandemic the categories which recorded the largest increase in sales included over-the-counter drugs (108%) or food products (103%). According to OECD research [https://www.oecd-ilibrary.org/sites/23561431-en/index.html?itemId=/content/publication/23561431-en], recently the market of global e-commerce grew 20% annually.

The post-pandemic period, called by many the new normal, saw the end of dynamic growth in this market segment, which may be of concern to e-commerce owners who have decided to transfer a large part of the resources to the network. According to Salesforce Shopping, the decline in the e-commerce market around the world is around 3%. However, in Europe, this indicator is much higher by as much as 13%. This is the first time in the nine-year history of the Salesforce Shopping Index and reflects the results of e-commerce following the lockdown period. Maintaining continuous growth at such a high level seems unrealistic.

Polish e-commerce has changed in the last two years. The most noticeable change involves the percentage of online buyers. According to the report „Omni-commerce. I buy comfortably", in 2020, 72% of all Poles using the Internet shopped online, compared to as many as 84% today. With the popularity of online shopping, their frequency has also increased. Now, more than half of Polish e-commerce customers shop more than once a month – from two to five times. As many as 86% of customers count on the fact that when an e-shop opens, it automatically recognizes them when they switch between channels and devices, and 75% of them work with product recommendations. Today's online shoppers also expect a smooth shopping experience – they want to save time and not put effort into it, preferably thanks to the automation of marketing communication and the purchasing process itself. At the same time, they require you to focus on their attention – as many as 69% fill baskets „just to try" or abandon them absentmindedly (regardless of the industry) and 45% compare prices in various e-shops before deciding (*Chamber of Electronic Economy,* 2022).

As many as 49% of buyers admit that they have done such a spontaneous purchase of a product after receiving its recommendation. Secondly, the value may increase by up to 37%. basket after implementing the recommendation

system in the online store. Thirdly, 47.4% of cart abandoners do so on purpose, expecting an extra promotion on leftover products in it.

To change the values above, the firms should rebuild their loyalty programs to achieve sales goal on e-commerce platforms.

The first step in building a loyalty program is to identify the company's needs and goals at the introductory the stage of creating a program. At the beginning, the firm must answer the basic questions: What does the firm want to achieve with specific actions? Is there a specific customer group that is most valuable? Should the firm choose between increasing the frequency of purchases?

The next step in building loyalty program awareness and acquisition of new participants requires:

- Starter packs or extra points for registration.
- Well targeted and personalized e-mails and SMS.
- Promotion of the program by internal sales force.
- Very good UX: ease of use, also on mobile phones (which not necessarily must be associated with high costs arising from creating a separate application – considerable possibilities are offered, for example, by PWA, i.e., progressive web application).
- Simple and clear rules of participation in the program – research shows that complicated conditions are one of the most common barriers to take-up.

The factors that help to engage loyalty program participants include:

- Tailored communication, including occasional (e.g., Women's Day, holidays) and personalized one e.g., related with a new task.
- Appropriate reward frequency with a well-calibrated point value.
- Frequent contact and positive emotions related to the program are the basis for the participant's involvement.
- Quizzes, polls, knowledge base.
- Push communication, i.e., notifications, reminders directly on the phone.
- Rankings and competition (there is plenty of research that proves that healthy competition is motivating).
- Convenience and intuitiveness of using the program as well as simple and clear rules.

Compared to 2021, the percentage of people using mobile applications is increasing – over the last year it increased by 13 percentage points. This may be due to e.g., the appearance of a new application belonging to the Biedronka discount chain, which attracted several million users from all age groups. In 2022, the number of participants using mobile applications in such programs as: Lidl Plus, Żapka, Vitay, Monety Allegro and Empik Premium increased significantly.

The current situation associated with a large increase in prices in a relatively short time means that Poles are increasingly looking for savings. Therefore, now it can be expected that all methods that will allow consumers to save money will gain popularity. The latest Consumer Radar ARC Rynek i Opinia survey shows that Poles feel that their quality of life has deteriorated compared to the same period a year ago, but the consumer optimism index is steadily increasing.

Consumer optimism index dropped to – 17%. Also, an indicator of readiness to make bigger purchases goes up slightly, even though both factors have negative values.

Loyalty program efficiency check program must have the indicators that show how much you achieve your goals. KPIs of loyalty programs should show the following:

- Sales level and number of new customers acquired.
- Number of new participants.
- Number of registered and active participants.
- Points earned and spent.
- Evaluation of the program by the participants themselves e.g., satisfaction survey or NPS factor – net promoter score.

5. Conclusion

The changing social and technological reality causes the market of loyalty programs to also evolve. Only constant updating of knowledge and implementation of new solutions allows you to maintain a competitive advantage. The market of loyalty programs is also evolving in terms of technology – new tools appear, especially thanks to artificial intelligence that can help in building relationship with customers.

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Chapter 12

The Importance of Emotional Intelligence in an Organisational Context

Marian Bursztyn

1. Introduction

In modern times, organisations are in a constant need to increase productivity in order to achieve high market competence and competitiveness. The evolving changes that are taking place in society are generated by the constant development of technology and the modification of approaches to the working environment in terms of transforming people's emotional structures. In this respect, employees' emotions are an important element of the changes taking place. They affect not only their work performance, but are also an integral part of building positive interpersonal relationships. This aspect becomes an essential element during the implementation of any project and is a major challenge for professionals and leaders. These individuals are responsible for leading the team, legitimising intrapersonal, interpersonal and intergroup relationships within the organisation. The professional must develop his or her ability to control his or her impulses, manage his or her emotions and act in a coherent manner, being intelligent in directing the work and thus ensuring the continuous improvement of the relationship between team members, stakeholders and the organisation. In this respect, emotional intelligence is seen as a strategic tool that, when developed throughout life, makes it possible not only to provide knowledge about emotions but to use it at the same time. The understanding of the characteristic behaviour of human nature is used in human resource management to bring out the maximum potential of the people who build the organisation. The knowledge gained through the development of emotional intelligence is a remarkable skill that gives a decisive advantage in the personality development of leader-professionals. It is linked to many aspects that include individual career choice, building and maintaining interpersonal relationships at work, the ability to resolve conflicts, the ability to listen and understand oneself in the right way,

and getting the expected results. All of these elements determine an individual's potential for an attitude of self-control, self-knowledge and emotional control.

This situation makes it necessary to analyse the factors that ensure the use of emotional intelligence as a key factor that can ensure the improvement of interpersonal communication in the proper functioning of an organisation.

2. Modern Management

The greatest and most important challenge of modern management is to increase organisational profit through people management. The contemporary business context is reflected in those organisations that have realised the need to increase the control and efficiency of their internal and external processes. As a result of this situation, today's professional, or leader in organisations, becomes a strategic collaborator, responsible for ensuring that business objectives are properly understood and that the resulting work effort meets company expectations. In seeking results for his or her organisation, the modern professional needs to know how to deal with diverse conflicts, which are mainly behavioural in nature. This means that the reason for this becomes an understanding of running work as managing people rather than managing the work itself. Human beings as human beings are endowed with emotions and feelings. They should be considered as essential elements of the working environment having the same validity of acceptance as ideas and technical knowledge for a better use of human resources. People, with their attitudes, beliefs and emotional states, trigger the corresponding chain reactions that influence the success or failure of an organisation (enterprise). The combination of all the above elements seems to reflect the approach of Goleman (Goleman, 2007, p. 121), who believes that it is only a differentiated approach to the functioning of an organisation that supports and allows the creation of forms of leadership.

In this regard, it becomes necessary to understand the importance of emotional intelligence in leadership and its relationship to improving interpersonal communication in organisations, and to identify how emotional intelligence can improve interpersonal relationships in organisations. Understand the mechanisms associated with stress and their impact on leaders' emotions. Self-control can be used to make better, less impulsive and therefore less aggressive decisions. In this way, a number of conflicts resulting from hasty and ill-considered decisions, defined in moments of strong emotional tension, can be avoided. According to S. Suan (Suan, et al., 2011, p. 13), "Emotional intelligence is simply the intelligent use of emotions – that is, intentionally making emotions work in your favour, using them as an aid to dictate your behaviour and reasoning to improve

their outcomes". The nexus of emotional intelligence can be linked to organisational performance, as applying it to the work of all levels of management creates a stable foundation for building the common elements to create an environment conducive to organisational growth.

3. Emotional Intelligence

Emotional intelligence is a set of emotional and social skills that influence the way we perceive and express ourselves, develop and maintain social relationships, cope with challenges and use emotional information in effective and meaningful ways. Several definitions of emotional intelligence have been proposed over the years.

When formulating the definition, Goleman pointed out that "Emotional intelligence is the ability to recognise our own feelings and the feelings of others, to motivate ourselves and to manage emotions well within ourselves and in our relationships" (Goleman, 2007, p. 73). It emphasises the need to have knowledge about emotions, which can be used to understand our inner and social world and, consequently, enables us to make appropriate and appropriate decisions. Similarly, Bar-On (Bar-On, 2002, p. 153), referring to the possibility of using emotional intelligence in everyday life, but also in professional life, emphasised its adaptive function realising "a range of non-cognitive abilities, competencies and skills that influence an individual's ability to succeed in coping with the demands and pressures of the environment". Bradberry and Greaves (Bradberry & Greaves, 2005, p. 37) point out that emotional intelligence is the 'missing element' in the conceptualisation of a complete, whole person, with personality and intelligence being two key components. It is worth noting that emotional intelligence refers to a person's non-cognitive abilities, which include both the ability to be aware of one's own and others' emotions, and the ability to manage these emotions (Langhorn, 2004). It is the practical knowledge that one needs to have in order to effectively build appropriate relationships and thus shape the behaviour of others. Becoming aware of one's own emotions and knowing the right ways to express them, as well as being able to read the emotions of others, is becoming a key issue in building an organisation.

Emotional intelligence can be seen as four interrelated components: perceiving emotions, understanding emotions, managing emotions and using emotions. In the first area of perceiving emotions, the core ability is the ability to register and recognise emotions in oneself and others. People with a high level of emotional intelligence are able to identify when they are experiencing a particular emotion and are able to use the appropriate vocabulary to label

the feeling. In addition, they are sensitive to other people's emotions and can accurately define them. Another component is emotion understanding, which refers to the use of specific information provided by emotions that can influence the arrangement of elements of an event. The resulting emotion conveys to the individual various data from his or her environment, stimulating him or her to act in a certain direction. In this way, emotionally intelligent individuals are able to 'read' this information and use it to guide their behaviour. The penultimate component concerning the management of emotions concerns the individual who has the ability to quickly recognise his or her emotions and understand their meaning. This scope applies to one's own emotions as well as those of others. The correct recognition of emotions enables one to make an appropriate response especially in difficult or stressful situations. The final component becomes the ability to handle emotions. This competence includes the ability to use, created and perceived from the environment, emotions in order to strengthen thinking for appropriate decision-making.

From the above, one can conclude the many benefits of developing emotional intelligence, which: enables individuals to use not only thinking skills, but also to harness the information and strengths that emotions bring; takes a realistic and practical view of emotions; facilitates understanding of self and others, beyond superficial information; stimulates and enables empathy to improve the quality of human interactions; adds a competitive advantage over cognitive intelligence and technical skills alone, so that individuals are able to strive for excellence and success using a range of intelligences; allows individuals greater autonomy and control over which emotions they would like to experience more often and which they consider undesirable in a given situation and from which they would like to switch. All of these benefits enable people to build relationships properly, from personal relationships to contexts and professional settings.

Mayer and Salovey (Mayer & Salovey, 2011, pp. 396–420) identified emotional competence as an important component of emotional intelligence. These elements include *personal competence* and *social competence*. The first – *personal competence* – is based on the individual's recognition of his or her own emotions, the ability to express emotions appropriately and the ability to maintain emotional control and adapt them. These competences form the basis of social competence. The components belonging to the area of personal competence are *self-awareness*, *motivation (self-motivation)* and *self-regulation*.

While the second – *social competence* – refers to a person's ability to correctly recognise emotions in others and respond to them appropriately. The components included in social competence are *social awareness* and *empathy* and *social skills*.

Self-awareness is a core competence that serves as a basis for the development of other competences. In context, awareness of one's own emotional state creates the possibility to obtain the experience of multiple emotions simultaneously. Self-awareness is a core competence that serves as a basis for the development of other competences.

Motivation (self-motivation) in the context of emotional competence means maintaining self-motivation and moving towards a goal by effectively managing the experience and expression of emotions. Sustaining motivation by regulating emotions in the context of failure or success is a key skill of emotional competence.

Self-regulation refers to the ability to direct and regulate one's own emotional experiences as well as their expression. This emotional competence leads to the maintenance and correctness as well as functionality and effectiveness of creating as well as maintaining both personal and professional relationships. Self-regulation is a key competence for ensuring smooth functioning in social contexts and effectiveness at work.

Social awareness is a component of emotional competence, which means being aware of the feelings and emotions of others (not only individuals but also the group). This component becomes an important and key component for developing effective and empathic relationships and working together to achieve group goals.

Social skills refer to the ability to interact with others in a socially acceptable way, while ensuring personal, mutual or other benefits as a result of the interaction.

An important aspect of building relationships in an organisation is the ability to identify and understand emotions in oneself and in other people. Identifying emotions is becoming one of the elementary skills of being emotionally intelligent. Accurately identifying emotions in ourselves and others around us is a key skill for understanding what is going on in our inner world and in our social world. The ability to identify emotions can be considered in two scopes: emotional awareness in oneself and emotional awareness in others. In the first scope, identifying one's own emotions is essential for effective emotion management and is based on skills such as recognising emotions, naming the emotion experienced and describing or expressing the emotion experienced.

The construct of being able to recognise emotions is characterised by being aware of the emotion experienced, identifying and labelling it appropriately and expressing it appropriately. In order to develop emotional awareness, it is important to pay attention to one's own feelings, rather than ignoring or expressing them impulsively. The ability to pay attention to one's feelings and think about

them before expressing them externally becomes important here. In building relationships between people in the organisation, the element of learning and being aware of the relationship that exists between life (work) situations and the emotions experienced becomes important, as more often than not specific situations trigger specific emotions. An element that helps to identify the emotion experienced, such as: the physical or bodily reaction to the emotion (e.g. dry mouth in the case of anxiety); bodily reactions (e.g. feeling shaky); emotions expressed through body movements, posture or tone of voice. The ability to identify and articulate emotions becomes crucial for maintaining meaningful interpersonal relationships. In turn, the ability to recognise them enables the individual to form meaningful social relationships and deal effectively with emotional difficulties.

Like personal emotional awareness, being aware of the emotions experienced and expressed by others around us is a key skill that leads to social and professional wellbeing. An inability or unwillingness to pay attention to other people's emotions can lead to many misunderstandings and conflicts. Identifying others' emotions accurately and tuning one's own response to them appropriately leads to better communication and cooperation. Emotional awareness in others encompasses three interdependent skills such as emotion perception, emotion recognition and emotion interpretation. Emotion perception can be considered as the ability to recognise emotions in others. Emotional awareness of others entails making accurate decisions about the subjective experiences of others by correctly interpreting their physical changes through sensory systems and inferring the implicit meaning of these observed changes. Emotions can be expressed verbally or non-verbally or through a combination of both. The verbal channel of communication is expressed through a number of elements including the utterance of words as well as other vocal features of speech (rate, pitch and volume of voice), while non-verbal aspects may include facial expressions, kinetic behaviour (gesture, posture, body movement) and proximal (physical distance during face-to-face interaction).

All the elements discussed above are of great importance in creating the right interpersonal relationships, which undoubtedly has an impact on the created structure of personal and emotional relationships in the organisation.

4. Emotional Control in Conflict Resolution

A contemporary organisation operates in a permanently changing environment, which results in the need to respond effectively to the changes taking place. These changes cause, and often are the cause of, many conflicts, which have an impact on the deterioration of relations in the organisation, difficulties

in teamwork and, as a consequence, are significant in the decision to potentially resign from further functioning in the organisation.

In this respect, the emotional context of the emerging conflict becomes an important element, which becomes the basis for a reduction in activity and commitment to the jointly pursued goal of the organisation.

For this reason, the issue of emotions should be considered in terms of behaviour and their impact on cognitive processes, which involve processing the information provided, since human relationships are mainly based on the links that exist between members of society, thanks to communication (Goleman, 2007, pp. 97–115). Within these connections, conflicts are created, which cause a change in the perception of the situation at hand. This can lead to unconscious memory manipulation, which is related to the action of emotions in a given situation (Jarymowicz, Imbir, 2011, p. 13).

The perception of a situation is influenced by such elements as *steoretypisation*, *bias* and *selectivity*. In the first area of *steoretypisation*, emotions influence the perception of the other person through the prism of preconceived schemes. It is then easy to attribute various often untrue attributes, which helps to maintain a certain image of the conflict. In this respect, there is often a dichotomy in the image of both parties. The aggrieved person attributes positive attributes to himself or herself, while perceiving the other party in an unfavourable way by attributing various negative intentions. This allows them to whitewash their own image. The emotions in such a situation prevent the positive characteristics of the other person from being perceived, and may even intensify the unpleasant or disrespectful behaviour. It seems that the more negative emotions towards the other party, the more negative their image becomes.

Another element is *bias*, which not infrequently results from the emotional colouring of a given event inserted into the pattern of such situations (Oatley, Jenkins, 2003, p. 267). This disposition can result in a change in the elements of a given situation due to a memory reduction of the objective perception of the situation. The situation becomes a situational schema as people remember the emotions together with the context in which they arose (Zimbardo, Gerrig, 2009, p. 397). The information carried by the emotion is processed according to the mood the person is in. The last element in this respect is selectivity, which is an important personality trait that relates to the process of repression (Zinczuk, 2004, pp. 18–19).

Displacement is used by people to deal skilfully with information that threatens or undermines the self-image. This can lead to resentment of the other party, while repressing defence mechanisms as an integral part of the personality. Emotions can occur in an automatic or reflexive way (Jarymowicz, Imbir,

2011, pp. 18–19). The first appear in an automatic way and have their origin in the lack of control over their formation and their emergence is often difficult to determine clearly. In this case, emotions can lead to difficulties in analysis and rationality in thinking. In an organisation, the attribution of self-loathing to a superior or co-worker can lead to such an automatic reaction – a fear of rejection. In the second range, the emergence of emotions is aroused intentionally and is accepted.

The conflict situation that arises realises the possibilities and skills to control emotions and creates opportunities for its resolution, which leads to good coexistence in the working environment. The perception of conflict emergence must involve all parties in the organisation.

Classical models of conflict management view such incidents as a process of impact that is detrimental to the organisation. In contrast, contemporary trends see conflict as an inevitable phenomenon that is inherent in organisations. Properly managed, conflict is intended to foster change in the working environment. Beneficial conflict occurs when an organisation's interests enable it to move to a higher level of its performance expressed in increased motivation, problem-solving skills, creativity, and ultimately leading to constructive change in its operations. Conflict becomes a problem for an organisation when it harms it and leads to negative consequences. Conflict then becomes destructive, reflected in wasted time or putting personal well-being above the interests of the company. The result is wasted time and energy, distracting people from achieving important goals. It is not uncommon for conflicted managers to compete in an unmeritorious manner, provoking specific contentious situations for their own benefit.

In today's organisations, managers (leaders) need to know, learn and improve both the functions of rational intelligence and develop emotional intelligence, as they operate in situations characterised by high levels of emotional stress resulting in often inappropriate outcomes. By using emotional intelligence in conflict resolution, leaders manage to remain impartial and find ways of calming their moods, preventing an atmosphere of tension from spreading within the team, while demonstrating the importance of harmony in teamwork, directing everyone's efforts towards achieving the organisation's goals. Normally, in an environment where people from different generations, with different levels of maturity and motivation come together, conflicts can arise. The leader must act quickly and effectively to ensure that such conflicts do not interfere with the good of the team and the goals of the organisation.

5. The mportance of Emotional Intelligence for Organisational Leadership

The contribution of leadership in managing emotions in the work environment is becoming increasingly important. This importance is linked to the fact that people are the most important resource in a production system, as they think, act and monitor their procedures taking into account their environment. It is considered necessary for professionals in managerial positions to have the skills to deal with emotions. According to McCleskey (McCleskey, 2014, p. 83), "[…] leadership is the ability to use power to influence followers' behavior". Leadership means success in directing employees to achieve specific goals, achieving behavioural focus among the members of the organisation. A leader acts in an organisation as in a family. He or she is appointed manager and must realise his or her importance when performing actions that are accepted by all members.

It seems reasonable to say that emotional unpreparedness causes many problems. These include the lack of emotional preparation of leaders who use their positions to humiliate others, misuse authority and power, show emotional instability, and at the slightest sign of tension introduce a real emotional mess into the work environment. The manager is responsible for the overall process of change and the dynamics of everyday life. He is responsible for all decisions and bears their consequences. As a result, he should use his skills to promote others, not to subjugate them. It follows that most professionals who occupy managerial positions seem not to be aware of the benefits that come from the use of emotional intelligence, paying only attention to the benefits obtained by the organization. This reflection is confirmed in the case of those professionals who were hired precisely because of their technical skills, and who soon leave their position due to behavioral maladjustment.

The functioning of leaders is the product of several factors, among which Avolio and Gardner (Avolio & Gardner, 2005) indicate that positive psychological capital is influenced by self-efficacy, optimism, hope and the renewability of human resources. The positive tendency in the actions of managers, who are responsible for positive emotional and cognitive self-positioning, appears to be a new construct in organisations. This construct is closely linked to those behavioural resources of leaders that are responsible for coping with difficult situations (Demerouti, Bakker, 2011). Emotional intelligence is well-established among the resources valuable for leading others. Perceiving, understanding and regulating one's own and other people's emotions is considered crucial for forming and sustaining interpersonal relationships. With these capabilities, the modern leader stays in line with his or her own values, while appropriately creating

situations in which both he or she and his or her colleagues can function optimally in the organisation.

It seems that being a leader-leader requires recourse to positive resources derived from his *authenticity*, which occupies a central place in the concept of leadership. The basis of the attitude presented is found in trust, which, in mutual relations, constitutes its foundation, and undoubtedly affects the psyche of the person by consolidating the meaningfulness of the actions taken (Avolio et al., 2004). The leader's attitude of authenticity leads to the development of himself and his colleagues, with whom he builds relationships in the context of the whole organisation forming the foundation of his functioning. The development of authenticity encapsulates four key dimensions that transparently refer to emotional intelligence, and these are *self-awareness*, *transparency*, *openness to information* and *ethics/morality* (Furmanczyk, 2011, pp. 69–80). Self-awareness in this respect refers to insight and belief in one's traits, motivations, feelings, judgements and beliefs, and values (Ilies et al., 2005, p. 16–18). Through self-awareness, an individual has a sense of his or her strengths and weaknesses, which fills in the range of knowledge about one's own behaviour that influences others (Kernis, 2003, pp. 23–25).

An important element is *openness* to information, i.e. the ability to process information relevant to the individual, which is taken into account when making decisions (Walumbwa et al., 2008, pp. 46–47). A leader who displays an attitude of openness to information will not distort or ignore it. *Ethics/morality*, on the other hand, is expressed in behaviour that is consistent with professed values and needs. Such behaviour is directed towards gaining rewards and avoiding punishment, and is thus the result of a consciously integrated form of self-regulation.

Consequently, an authentic leader is aware of his or her own thoughts and behaviours, while being aware of his or her values, knowledge and strengths. A manager with the aforementioned qualities leads his or her subordinates while fostering a healthy and ethical work climate, and subordinates perceive him or her as confident, optimistic and a person who is flexible and open to change.

It is worth remembering, however, that emotionally intelligent leaders have a high awareness of their emotions, are able to control them and use them to act on the organisation's purpose through their effectiveness. They know how to use the right emotions to make their activities effective and how to control negative emotions that do not contribute to the goal.

The reasoning adopted above indicates that with leadership development, there is an increase in the level of emotional intelligence, which results in the humanisation of the leader's work, which in turn influences the building

and maintaining of relationships with all colleagues, using their social competences.

6. Conflict Resolution Styles in the Context of Emotional Impact

Organisational behaviour refers to the emergence of individual, group and organisational processes in the workplace. Within these behaviours, a number of challenging situations arise that lead to a variety of conflicts. The resulting conflicts may be supportive or dysfunctional (Robbins, 2001, p. 179). Resolving the former in a constructive way leads to an increase in organisational effectiveness in terms of building relationships within the organisation, thereby improving cooperation between its participants. Dysfunctional conflict, on the other hand, leads to a decrease in the effectiveness of team cohesion, which may eventually lead to the break-up of the organisation. The occurrence of one of the above situations is influenced by emotions. The predominance of negative emotions results in an emotional distance effect, which favours dysfunctional conflict. This emotional destructiveness will be subject to the prolonged experience of negative emotions, and may result in a lack of proper functioning of the human individual (Goleman, 2007, p. 252). Negative emotions distort the real view of a situation and thus lead to an inappropriate and inadequate perception of it, and this leads to inadequate human reactions. Long-lasting positive emotions, on the other hand, encourage conflict resolution in a constructive manner.

Piotrowski (Piotrkowski, 2005, pp. 212–213) distinguishes five styles of conflict resolution that result in appropriate emotional sensations and behaviour of the participants: *avoidance*, *adaptation*, *compromise*, *competition* and *cooperation*. The first style – *avoidance* – is related to withdrawal from the conflict situation. In this case, the person experiences a lot of negative emotions and his/her frustrated attitude is related to previous experiences. As a consequence, the situation can lead to a rupture of interpersonal relationships and, consequently, resignation. In the case of *adjustment*, the person succumbs emotionally to the other side of the conflict. In this case, it seems that there may be manipulation of emotions here, which may lead to giving up one's needs with a view to the future and anticipated gains. In adjustment conflict situations, the employee has to decide individually on the extent of the adjustment in question. Another style – *compromise* – wants to satisfy the needs of each party. The emotions that arise in this area are directed towards the desire to arrange a correct relationship between the conflicting parties, which leads them to give up some of their needs. In this case, there are positive emotions towards the interaction partner, which create a sense of importance for the partner. Consequently, the conflict is

resolved half-heartedly because the unmet needs are relevant to the individual parties. Another style is *rivalry*, which is treated as a battle ground by the parties. Such a style of conflict resolution leads to emotional frustration, which results in an escalation of the conflict, with no possibility of resolution. The last style indicated is *cooperative*, which enables the conflicting parties to reach an agreement in the context of arranging good interpersonal relations. The parties in this case are ready to withdraw all their negative emotions in order to obtain a satisfactory solution.

Managing conflict situations (organisational stress) requires a multifactorial view of reality, encompassing economic, affective, cultural, physical and environmental aspects and, above all, aspects of emotional intelligence, which enables the realisation of proper relationship building and maintenance in the organisation.

7. Conclusion

Improving organizational skills means improving the level of use of emotional intelligence by people managing it by appropriately dealing with emotions. Developing the skills of non-emotion, listening and empathy strengthens the maturity of leaders (managers) in the organization by better understanding others, decoding non-verbal messages and trying to understand the motivation and attitudes of organization members.

Identification of emotions is one of the many elements that a professional leader needs to better manage their emotions, warning against possible threats or supporting the positive aspects of developing the organization. The use of emotional intelligence in the process of building and maintaining interactions and the awareness of the importance of creating a situation conducive to building strong emotional ties of employees of the organization is becoming a need of a modern organization.

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Chapter 13

Support Systems for Research Proposals – Institutional Approach

Sylwia Krzyżek-Liburska

1. Introduction

Writing research grant proposals is a significant means of seeking research funding at higher education institutions. Research grants and agreements with national and EU agencies generate an increasing share of universities' income in EU countries (Geuna, 1998). Obtaining grants reflects a scientist's participation in a structured system of interaction between stakeholders, i.e. scientists, grant agencies and business, industry and politics and rigorous application evaluation procedures, while writing a proposal involves navigating this system to negotiate the validity of research and its contribution to science and knowledge transfer. However, understanding what factors influence grant funding remains problematic (van den Besselaar & Mom, 2022; Yousoubova & McAlpine, 2021).

Career advancement for most researchers is measured by their ability to obtain external funding support (Jones et al., 2017). However, grant funding remains highly competitive in the context of stagnating growth in public research funding and the unpredictability of funding decisions. As a result, many researchers attribute the granting of funding to luck, while some are hesitant to apply at all, avoiding futile efforts (Yousoubova & McAlpine, 2021). For universities to increase research funding and subsequently increase research productivity, it is essential that university faculty members receive adequate support in writing research grant proposals. To provide such support, universities need a clearer understanding of faculty perceptions of motivators and barriers in the research grant proposal writing process (Yaun et. al., 2020). While all researchers have at least some academic writing experience, experience with grant writing may be limited to non-existent for younger ones. Academic and grant writing represent two distinctive genres of writing, each necessitating differing approaches (Walden & Bryan, 2010).

The aim of the article is to characterize the institutional support systems for applying for research grants and indication, based on literature analysis, areas for improvement of these systems.

2. Research Background

Most institutions and universities have application procedures and management staff who can assist potential principal investigators with bureaucratic procedures (Holm & Kim, 2010). The field of research management emerged over the last fifty years out of the need to manage the increasing number and complexity of research funding applications. Research grant applications with strong institutional and mentoring support are more likely to succeed (Agarwal et al., 2006; Kwekkeboom, 2014; Sauer & Gabbi, 2019).

The often complex and time-consuming grant application process can seem particularly daunting to young researchers. Anticipating these difficulties, every institution should have a grant-writing support system. The administrative research staff of institutions should be well-versed in the administrative part of the grant application process. The tasks of these support staff include, among others: assistance in filling in the forms, thorough checking of the completeness of the application, and obtaining the required signatures. This is especially helpful when submitting a multi-partners application; the support staff can help negotiate the internal requirements of other institutions (Chung & Shauver, 2008).

The variety of funding sources and the overall complexity of fundraising for research often require the assistance of professionals called grant managers. These specialists assist in preparing funding applications and facilitate the often complicated application process. Grant managers contribute to the mission of research-intensive institutions by helping them obtain competitive funding. Research from Portugal shows improved success rates for advanced funding applications, suggesting that grant managers are essential to support research activities (Vidal et al., 2015). Research management suffers from a lack of exchange of good practice and networking and career or skills development opportunities. In addition, those working in the field of research management feel that they lack a professional identity and a structured career path or formal development path (Vidal et al., 2015). Research managers are part of the profession where career paths are underdeveloped (Green & Langley, 2009; Lewis, 2014). Further development of grant management at the institutional level and processes supporting the success of universities in writing grants is warranted (Wisdom et al., 2015).

Grant managers can be employed in various institutional support systems in applying for grants. They can be employed in self-contained positions or as grant

office employees or grant writing trainers (Lewis, 2014; Poli et al., 2014; Whitchurch, 2017). The next chapter presents the types of institutional support in applying for research grants, in which grant managers play the leading role.

3. Research Methods

A literature review on institutional support systems in applying for research grants was reviewed (Snyder, 2019). Scopus was used as the main database.

4. Results

When it comes to writing grants, institutions often provide support systems to assist researchers in the process. These institutional support systems may vary depending on the specific organisation and its resources (Ambarova & Zborovsky, 2020; Aziz & Tran, 2022; Kulage & Larson, 2019; Weber-Main et al., 2022). Table 13.1 presents the most popular institutional support systems for applying for research grants, along with implementation examples.

Table 13.1. Most popular institutional support systems for applying for research grants, along with implementation examples

Type of support	Examples
Grant Offices or Research Support Offices	The Office of Research and Grant Development, University of South Carolina, USA (UofSC, 2023) Grant Support UvA-HvA, University of Amsterdam, Netherlands (UvA-HvA, 2023) Grant Office, Sapienza University of Rome, Italy (Sapienza, 2023) Unit for Projects Support, Krakow University of Economics, Poland (Granty, 2023)
Grant Writing Workshops and Training	Grant writing workshop, Karolinska Institutet, Sweden (GWW, 2023) Introduction to Grantwriting – workshop, University of New Hampshire, USA (Grantwriting, 2023) Grant Writing Workshop, University of Limerick, Ireland (Limerick, 2023) Workshop on ERC grants from Enspire Science, Polish Academy of Sciences, Poland (PAN, 2022)
Internal Peer Review	Queen's University Belfast, UK (Belfast, 2023) The University of Edinburgh, UK (Edinburgh, 2023) The University of Calgary, Canada (Calgary, 2023)
Research Development Officers	The Researcher Development & Research Culture team, Doctoral College, University of Exeter, UK (Exeter, 2023) Research Strategy and Support Office, The University of Queensland, Australia (RS&SO, 2023)

Source: own work.

4.1. Grant Offices or Research Support Offices

Many institutions have dedicated offices or departments specialising in grant management and support. These offices can provide guidance on finding

funding opportunities, proposal development, budget preparation, compliance requirements, and submission procedures (Sauer & Gabbi, 2019). The tasks of grant offices include:

- searching for funding opportunities from various sources such as government agencies, foundations, and industry sponsors (Liang et al., 2021),
- assisting researchers in developing high-quality grant proposals (Mulfinger et al., 2016; Reiser et al., 2015),
- providing information on eligibility criteria, funding priorities, and submission deadlines, helping researchers identify the best opportunities for their research endeavours (Reiser et al., 2015; Wedekind & Philbin, 2018),
- ensuring compliance with funding agency regulations and university policies, including cost allocation, indirect costs, and matching fund requirements (Sauer & Gabbi, 2019),
- coordinating with various institutional offices to obtain the necessary approvals for grant submissions (Liang et al., 2021),
- reporting, ensuring timely and accurate submission of required reports to the funding agency (Frantz, 2013).

4.2. Grant Writing Workshops and Training

Crafting successful research proposals is among the most daunting and complicated skills to master, one that most investigators struggle to acquire and hone during the initial years of their academic appointments. Mentors can be valuable resources in modelling grant writing practices. However, many junior faculty do not have access to mentors with enough time to work with them to develop this essential competency; moreover, the degree to which mentors can or do teach grant writing skills is highly variable (Jones et al., 2017). Institutions often organise workshops or training programs focused on grant writing skills. These sessions may cover various aspects of grant writing, such as proposal structure, effective communication, budget development, and strategies for increasing the competitiveness of grant applications. Attending these workshops can enhance researchers' grant-writing abilities and provide them with valuable insights into the expectations of funding agencies (Glowacki et al., 2020; Jones et al., 2017; Sebalj, 2013).

4.3. Internal Peer Review

Some universities have internal peer review processes for grant proposals (Burns et al., 2014; Files et al., 2017; Internal Peer Review, 2023; InfWeb, 2023; Johnson et al., 2020; Kulage & Larson, 2018, 2019). These panels, also known

as internal review committees or grant review panels, are composed of experts from relevant disciplines who evaluate grant proposals before submitting them to external funding agencies (Files et al., 2017; Johnson et al., 2020). The key roles of the internal panel of reviewers are:

- proposal evaluation (Johnson et al., 2020),
- feedback and recommendations: they identify strengths, weaknesses, and areas for improvement in the proposals and offer constructive suggestions for enhancing the research design, methodology, impact, and dissemination plans (Kulage & Larson, 2019; Sauer & Gabbi, 2018),
- peer review process: they engage additional experts in the field to provide external perspectives and diverse insights on the proposals (Files et al., 2017).

4.4. Research Development Officers

Universities may employ research development officers who work closely with researchers to guide the grant-writing process. These officers have expertise in research funding opportunities and proposal development and can assist in identifying appropriate funding sources and strategies for success (Lewis, 2014; Poli et al., 2014; Whitchurch, 2017). The role of Research Development Officers (RDOs) varies depending on the institution, but their primary responsibilities typically include:

- providing guidance on funding criteria, application processes, and deadlines (Daumann et al., 2023),
- contributing to the development and implementation of research strategies and plans at the institutional or departmental level (Agostinho & Trindade, 2014; Poli et al., 2014),
- helping researchers improve the clarity, coherence, and competitiveness of their proposals, ensuring they meet the requirements and address the evaluation criteria set by funding agencies (Ambarova & Zborovsky, 2020),
- facilitating networking and collaboration opportunities among researchers, both internally and externally (Langley, 2012),
- ensuring research compliance and ethics (Lewis, 2014),
- assisting in data analysis and reporting, helping researchers interpret and present findings effectively (Agostinho & Trindade, 2014).

4.5. Areas for Improvement in Institutional Support Systems for Applying for Research Grants

Institutional support systems for research grant applications provide valuable guidance and resources to researchers, but they can be further improved by addressing issues of inclusivity, flexibility, and communication while streamlining processes and enhancing collaboration. An analysis of the literature on institutional support systems for applying for research grants allows us to indicate the following areas for improvement in these systems:

- inclusivity and access: enhancing support to cater to researchers from various backgrounds, career stages, and disciplines, ensuring that early-career researchers receive adequate assistance (Ambarova & Zborovsky, 2020; Liang et al., 2021);
- tailored support: developing customized support services that recognize the unique needs of different research areas, interdisciplinary projects, and innovative research;
- streamlined processes: minimizing bureaucratic hurdles and streamlining administrative procedures to expedite the application process without compromising compliance (Mulfinger et al., 2016; Reiser et al., 2015);
- proactive communication: improving communication channels to ensure researchers are well-informed about funding opportunities, deadlines, and changes in application requirements (Reiser et al., 2015; Wedekind & Philbin, 2018);
- external collaboration: fostering collaboration with other institutions and research agencies to broaden the scope of available funding opportunities and share best practices (Glowacki et al., 2020; Jones et al., 2017; Sebalj, 2013);
- monitoring and evaluation: implementation of mechanisms to assess the effectiveness of the support system, gathering feedback from researchers, and continuous improvement of the quality of assistance provided (Lewis, 2014; Poli et al., 2014; Whitchurch, 2017);
- mentorship programs: establishing mentorship programs where experienced researchers can guide and support early-career researchers in their grant application endeavours (Daumann et al., 2023).

5. Conclusion

The analysis of the literature about grant writing leads to the conclusion that the key to increasing the researchers' grantsmanship are institutional systems providing support in the following areas: building a scientific consortium,

providing detailed knowledge on specific competitions, analysing the discourse of conclusions, providing guidance on good grant writing practices, and relieving scientists from administrative obligations.

Career advancement for most researchers is measured by their ability to obtain external funding support. When it comes to writing grants, institutions often provide support systems to assist researchers in the process. These institutional support systems may vary depending on the specific organisation and its resources. Researchers need to engage with these institutional support systems to maximise their chances of success in grant writing. Researchers should familiarise themselves with the specific support services available at their institution and proactively seek assistance throughout the grant writing process. Institutions may support developing project budgets by offering guidance, templates, or access to financial experts who can assist with budget preparation. Additionally, some institutions may offer internal peer-reviews panels or funding to support pilot studies or preliminary work that can strengthen the proposal's overall quality.

The lower-than-expected results of Polish institutions in the EU FR result from many factors, including systemic, institutional, mental, and individual barriers. Therefore, scientists should be supported in their grant application work, and institutional and national approaches to supporting scientists in writing grants must change.

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Chapter 14

Cultural Approach in the Study of Migrant Entrepreneurship – a literature review

Weronika Hyjek

1. Introduction

The increasing challenges associated with migrations compel host countries to develop solutions that will enable immigrants to adapt to the labor market as effectively as possible. Research has shown that immigrant entrepreneurship can be one such solution, as it not only positively influences immigrant integration but also has a beneficial impact on the development of the host country (Brzozowska, 2021). Migrant entrepreneurship refers to economic activities conducted by migrants who have distinct socio-cultural or ethnic backgrounds related to their migratory origins. Researchers in the field of migrant entrepreneurship emphasize the influence of diverse cultures among migrant groups on their entrepreneurial efforts. They underscore the significance of values such as social and business attitudes, strong familial and religious connections, and trust, which enable specific immigrant groups to compete effectively in the business arena (Kloosterman & Rath, 2001; Glinka, 2018). The nature of immigrant entrepreneurial activities depends on customs, social networks, and practices observed both in their home countries and in the host countries. Immigrants are not a homogeneous group and vary in terms of culture, experiences, and access to resources. The success of immigrant enterprises depends on various factors, including social support, access to capital, management skills, and market knowledge (Kloosterman & Rath, 2001).

The challenge for contemporary societies is to explore solutions where immigrant entrepreneurship contributes to the development of both immigrants and the host country. In this regard, the cultural context of immigrant entrepreneurship is crucial.

The aim of this chapter is to present the cultural approach and its significance in the study of immigrant entrepreneurship. This study has been prepared using a review of relevant literature.

2. Concept and Essence of Migrant Entrepreneurship

The concept of entrepreneurship is often understood as the art of dealing with various situations (Lichniak, 2009). Its essence lies in initiating projects and activities that satisfy needs and generate profits. Entrepreneurship encompasses elements such as risk-taking, variations among individuals resulting in different perceptions of market opportunities, and the creation of innovations (not necessarily groundbreaking ones) (Shane, 2003). Entrepreneurship also involves a creative pursuit of taking on new challenges or improving existing activities. Migrant entrepreneurship refers to the engagement in entrepreneurial activities, particularly the establishment of new enterprises, by individuals who are either first-generation immigrants or second-generation descendants of immigrants. Related concepts introduced in this research area include ethnic entrepreneurship, which is based on connections and interactions among people sharing the same ethnic background, and diaspora entrepreneurship, which involves migrants maintaining strong ties with their country of origin (Kubiciel-Lodzińska et al., 2020).

Studies in the field of immigrant entrepreneurship primarily address similar issues, such as the creation and development of enterprises. However, immigrant entrepreneurship possesses distinct characteristics because it is influenced by the institutional, economic, and social context in which immigrants operate. The identity of an immigrant entrepreneur is multifaceted and can be understood based on four key factors: their status as immigrants, their role as entrepreneurs, their affiliation with the community of their home country or ethnic group, and their connection to the host country's society (Glinka, 2018).

Literature analysis suggests that immigrant entrepreneurship is also associated with ethnic entrepreneurship. Ethnic minorities, through the preservation of their culture and traditions from their home countries, and the identified demand for products and services specific to their nation, create business opportunities, including for newly arrived immigrants. Emerging niche markets often have low entry barriers but may not attract significant interest among the local population due to a lack of knowledge about potential customers' preferences and the ability to estimate revenue from operations. Furthermore, the ease of collaborating with representatives of the chosen nationality or, at times, the insularity of the environment resulting from their background, leads to the ethnic market being primarily served by members of the selected social group.

The development of this segment depends on the number and well-being of foreigners and the level of social capital possessed. Examples of economic activities within ethnic minorities that are considered the most popular and obvious include those in the gastronomy sector (Kruhlaya & Molenda, 2021).

The development and visibility of ethnic entrepreneurship have sparked increased scholarly interest, with research focusing on the reasons behind this phenomenon. It is primarily examined from a cultural perspective, emphasizing the significance of human and social capital in shaping immigrant entrepreneurial behaviors (Andrejuk, 2016; Kruhlaya & Molenda, 2021). The cultural context is also underscored by Kovál and Čermáková (2016), who identify three main approaches to explaining the existence of migrant businesses in destination countries. The first and most established approach is referred to as the cultural approach, the second approach is grounded in the concept of structural opportunities for immigrant enterprises, known as the interactive approach, and the third and newest approach assumes that migrant enterprises adopt a biographical perspective to highlight the agency of individual actors within given opportunity structures.

3. Cultural Determinants in the Context of Entrepreneurship Development

The characteristics of the determinants shaping entrepreneurial activities have a diverse nature. The selected concepts are presented in Table 14.1.

Table 14.1. Entrepreneurship determinants according to selected authors

Entrepreneurship determinants		
Hensel & Glinka (2012)	Gadomska-Lila (2016)	Kubiciel-Lodzińska et al., (2020)
– formal, – economic, – cultural	– social, – cultural, – legal, – financial, – technological, – psychological	– economic, – technological, – demographic and social, – legal, – political

Source: Own study based on: (Hensel & Glinka, 2012; Gadomska-Lila, 2016; Kubiciel-Lodzińska et al., 2020).

P. Hensel and B. Glinka (2012) identify three key elements of the entrepreneurial context, including formal, economic, and cultural determinants. In every country, economic activity is conducted within a specific legal system that regulates the forms and methods of conducting business. This system influences the relationship between employers and employees and establishes the main rules of the market game. Legal regulations and implementing institutions, such

as public administration bodies, play a significant role in this regard. The economic system and the overall state of the economy are of paramount importance to entrepreneurs, creating new opportunities and threats. Among the trends relevant to entrepreneurs, we can highlight globalization, the increasing role of ecology and new communication technologies, economic and financial crises, and the growing importance of knowledge in the economy. One of the most significant challenges for entrepreneurs in the economic context is acquiring financial resources for business ventures.

Cultural determinants of entrepreneurship encompass values and norms of behavior that create an environment either conducive to or limiting entrepreneurial activities. Culture influences the motivations of entrepreneurs, socialization processes, and interactions with other economic entities.

K. Gadomska-Lila (2016) also characterizes the determinants of entrepreneurship, which she divides into: social factors, including religion, history, and tradition; cultural factors stemming from social conditions, which include perceptions of entrepreneurship, stereotypes, propensity for entrepreneurial actions, values influencing work behavior, trust, and national cultural patterns; legal, financial, technological, and psychological factors. According to the author, the goal of creating an entrepreneurial culture is to strengthen and enhance innovative potential. A crucial aspect seems to be the approach to change, as entrepreneurship requires readiness for swift reactions, flexibility, adaptability, and, above all, perceiving change as sources of opportunities. Another pillar of entrepreneurship should be innovativeness. Creativity, willingness to take risks, embracing challenges, experimenting, questioning routine approaches and solutions, as well as tolerance for errors, preparedness for failure, and perseverance in overcoming obstacles are particularly important. The third pillar should be a shift in the approach to work, especially a proactive attitude, determination in problem-solving, promoting learning, and focusing on teamwork and seeking a synergistic effect by combining different competencies and approaches to problem-solving.

Meanwhile, S. Kubiciel-Lodzińska et al. (2020) list various factors influencing entrepreneurial behavior in society, including:

- economic factors, encompassing aspects like unemployment, inflation, wage levels, investments, competition intensity, and market entry barriers,
- technological factors related to changes in techniques and manufacturing technologies,
- demographic and social factors concerning population size and structure changes, including those associated with migration processes,
- legal factors pertaining to legal aspects regulating economic activity,

- political factors, including economic policy directions and instruments supporting entrepreneurship.

A fundamental role in fostering entrepreneurship should be attributed to individuals who, through their attitudes, initiate entrepreneurial activity. The entrepreneurial spirit is shaped through the entrepreneurial culture of the entire community, created by individuals. If individual community members support entrepreneurial attitudes and exhibit such behavior themselves, it becomes easier for others to be inspired by this way of functioning. The coexistence of entrepreneurial groups mobilizes and motivates others to engage in entrepreneurial activities (Brzozowska, 2021).

4. The Significance of Cultural Determinants for Migrant Entrepreneurship

The reference point for studying the relationships between cultural determinants and entrepreneurship is the research conducted by sociologist Geert Hofstede. In the 1960s and 1970s, Hofstede conducted studies among employees of the IBM corporation in various countries worldwide to investigate the influence of cultural determinants on values perceived by employees. Hofstede's concept of national cultures is the most widely recognized and frequently cited example of cross-cultural research in the field. The analyses carried out at IBM in the 1970s led to the development of a concept based on four dimensions: power distance, individualism-collectivism, masculinity-femininity, and uncertainty avoidance. This concept was later supplemented with a fifth dimension reflecting long-term versus short-term orientation, in response to the dynamic development of East Asian countries, following additional research in the 1990s. As a result, six indices were defined: *Power Distance Index* (PDI), *Individualism* (IDV), *Masculinity* (MAS), *Uncertainty Avoidance Index* (UAI), *Long-Term Orientation* (LTO), and *Indulgence versus Restraint* (Indulgence vs. Restraint) (Hofstede & Hofstede, 2007). K. Gadomska-Lila (2016), citing studies presented in the subject literature, indicates that an entrepreneurial-friendly environment is characterized by individualism, masculinity, a high power distance, and a low uncertainty avoidance index. Furthermore, research suggests a significant influence of cultural factors on the development of entrepreneurship.

The cultural approach finds explanations for ethnic entrepreneurship in group (ethnic) resources and the consequences of migrants' disadvantages in the destination country, giving rise to concepts such as ethnic economy, ethnic-controlled economy, middlemen minority, and ethnic enclave economy. The concept of ethnic economy is characterized by its marginal position in the general

economy, a rather large scale, typically concentrated in one economic sector with controlling ownership, and strong economic connections at both horizontal and vertical levels (Kovál and Čermáková, 2016).

B. Glinka (2018, p. 166) notes that immigrant entrepreneurship has a broader impact on the economy and society compared to conventional entrepreneurship. It goes beyond typical business activities and encompasses aspects such as:

- transferring unique competencies to the host country,
- revitalizing local communities by instilling an "entrepreneurial spirit,"
- reviving industries and geographic areas that are unattractive to host country entrepreneurs,
- stimulating economic exchange (as well as the development of social relationships) between the host country and the country of origin.

The cultural and socio-psychological characteristics of different migrant groups influence their entrepreneurial behaviors. Ethnic minorities may differ in terms of migration reasons, religion, language, education level, demographic background (regardless of whether other relatives engage in business activities or not), and access to family business networks. Some of these differences reflect the cultural diversity of the respective groups. Culture, in the form of family tradition in business and strong family ties, affects the motives for entrepreneurship, the financing of new start-ups, and the nature of the chosen business. It appears that certain aspects of culture, such as family tradition, have a greater impact on entrepreneurship than others, such as religion. Moreover, there is some evidence to suggest that the interaction between culture and entrepreneurship may change over time, i.e., between the start of entrepreneurial activities and subsequent business operations (Sahin et al., 2007).

The issue of migrants is often seen as not yet fully understood in the societies of host countries. A. Brzozowska (2021), based on her research, observes that immigrant entrepreneurship positively impacts the economic development of the host country, building regional competitive advantages and promoting innovation. She also points out that the positive impact of businesses founded by immigrants on the host country's labor market can be realized through:

- creating employment opportunities for individuals who are not recognized by the mainstream labor markets,
- reducing competition with native workers,
- developing entrepreneurial models that allow immigrants to earn higher incomes.

The researcher also mentions the role of the cultural traits and conditions of immigrants, which positively shape social capital in the host country.

The development of social capital as a result of ethnic entrepreneurship is also noted by Kruhlaya & Molenda (2021). These researchers understand social capital as the characteristics of social organizations such as networks, norms, and social trust that facilitate coordination and cooperation to achieve mutual benefits (Putnam, 1995, cited in Kruhlaya & Molenda, 2021, p. 81). They point out that immigrant entrepreneurship is determined by both pushing factors (discrimination in the labor market) and pulling factors (opportunities in the host country's market). Entrepreneurial activity among immigrants depends on the knowledge of entrepreneurs with a similar background, who can serve as both role models and facilitate the acquisition of funds for business idea development. They also acknowledge that foreigners benefit from contacts with the immigrant community, gaining access to information, experience, and ethnic support in seeking income opportunities in their new place of residence.

5. Conclusion

Globalization and the increasing significance of migration make migrant entrepreneurs an increasingly important category among business owners (Kubiciel-Lodzińska et al., 2020).

Culture plays a significant role in the development of migrant entrepreneurship. Migrant entrepreneurship, which involves individuals starting and running their businesses or other economic initiatives after moving to another country or region, is often shaped by various cultural aspects. Migrant entrepreneurship is influenced by the values, beliefs, and cultures from which individuals originate. For instance, individuals who have experience in running their businesses in their home countries may be more innovative and willing to take risks, even in their new places of residence. Undoubtedly, the resilience to adapt to new conditions and entrepreneurial ideas can be drawn from the experiences of friends or family members from the same culture, which can facilitate activities such as starting and managing a business. Language skills are also crucial, as they are essential for effective communication in the new place of residence and in the country where they conduct their business activities.

An undeniable benefit of migrant entrepreneurship for the host country can be the growth of a diverse business offering. Migrants can introduce new products, services, and cultural experiences within the local community. It is essential to remember that new, exotic cultures can also be a source of prejudice and discrimination, leading to difficulties in acquiring clients or forming business relationships.

The development of migrant entrepreneurship can be supported through appropriate educational and training programs that consider cultural differences and help migrants better understand the local market and other relevant conditions.

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PART III PERFORMANCE MANAGEMENT ORIENTATION TOOLS

Chapter 15

Measurement of Financial Goals of an M&A Project on the Example of a Cross-Border Merger

Janusz Nesterak, Damian Majkowski

1. Introduction

Regardless of the motives behind the merger and acquisition (M&A) transaction, the overriding goal of each acquisition project is to generate added value resulting from the merger. The benefits obtained exceed the potential effects that the combined enterprises would have if they functioned as separate economic entities. This translates into a higher value of the merged enterprises compared to their total value before the merger process.

Both the market practice of the authors of the monograph and the reports of commercial advisors specializing in M&A (Kengelbach et al. 2021; McKinsey&Company 2010; Navigator Capital & FORDATA 2022; The Boston Consulting Group 2021; Rouse et al. 2011), or literature of the subject directly indicate the fundamental role of Post-Merger Integration (PMI) in achieving the assumed goals of the merger, understood as achieving synergy effects and minimizing the risk of considering the acquisition process a failure resulting in impairment losses. These reports indicate that as much as 55–70% (depending on the source) of M&A transactions do not achieve the assumed financial synergy effects. Most experts consider the generalized cause to be ignoring the potential challenges that may arise in the integration process, and thus its poor implementation.

Especially interesting are studies conducted on a cross-border M&A, which in the globalized economy provide enterprises with a number of competitive advantages.

Grimpe and Hussinger point out that thanks to the implementation of a cross-border M&A, firms can acquire the existing distribution network and take advantage of local partners' knowledge of different cultures and national market conditions (Grimpe & Hussinger, 2008). Furthermore, cross-border

mergers and acquisitions facilitate the international flow of capital, goods, services, technologies and the integration of entities related to global value chains (Kot & Dragon 2015, p. 11). Teerikangas & Satu (2006, p. 3) addressed the thesis concerning the lack of sufficient theoretical understanding of the complexity of merger and acquisition projects. These concerns are particularly relevant for cross-border acquisitions, which are considered more difficult than domestic ones due to the presence of different national contexts and specificities. According to these researchers, it is surprising that there is not enough qualitative research on cross-border acquisitions.

From the research point of view, it is particularly interesting to identify and measure the financial goals of cross border M&A projects.

The aim of the monograph is to attempt to assess the importance of the measurement of financial goals of an M&A project. This assessment will be supported by conclusions obtained from a cross-border M&A project carried out in the sector of electricity prosumer services as part of the vertically integrated capital group's entry into a new business segment through the acquisition of a manufacturer of equipment from the prosumer power services market with production assets (i.e. factories and warehouses of installation components) located in Asia. The monograph presents the challenges faced by the acquiring company. It also describes the methodology and tools used to manage the integration process.

This monograph is part of a larger study on the issue of managing the Post Merger Integration phase in M&A projects.

2. Characteristics of the Cross-Border M&A

According to Kot & Dragon, cross-border mergers and acquisitions facilitate the international flow of capital, goods, services, technologies and the integration of companies related to global value chains (Kot & Dragon 2015, p. 11). Cross-border M&A also positively impacted financial performance. According to Fukao et al. (2008), foreign acquisitions improve target firms' productivity and profitability. Despite some articles reporting opposite findings (e.g. Vennet, 1996), the positive impact of international transactions supports the hypothesis of good practices transfer due to cross-border M&A (Faulkner et al., 2002). The important role of cross-border projects in building the market position of enterprises is also confirmed by market data illustrating the global value cross-border projects presented in Figure 15.1 (S&P Global Market Intelligence, 2022).

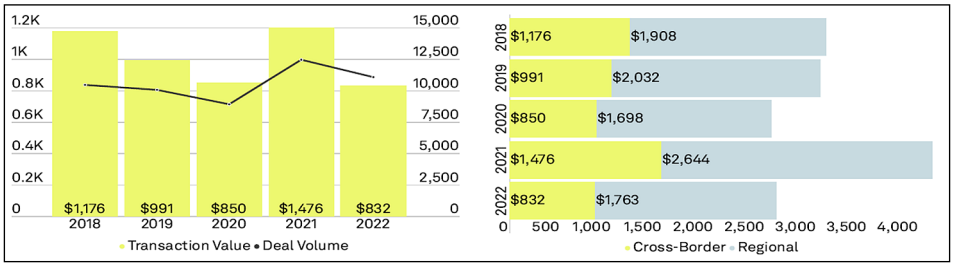

Figure 15.1. Global Cross-Border M&A by Deal Volume, Transaction Value & Share of Total Transactions ($B)
Source: S&P Global Market Intelligence. Global M&A by the Numbers: 2022 in Review.

Global organizations draw good practices and standards from various markets (Faulkner et al., 2002). Moreover, the merging entity often operates in a different market, so there is no problem in determining how to amalgamate the companies involved in the merger or in determining how to divide the market between them and optimize their respective operations. Foreign acquisitions tend to be associated with cost-cutting and profit or productivity improvements, while domestic acquisitions tend to be associated with increases in output (Fukao, et al., 2008). International transactions are frequently aimed at foreign expansion with the intention to transplant a business model (Marin, et al., 2016) that was successful in the domestic environment of another country. Therefore, we may assume that an international consolidation should positively impact the examined performance measures.

Some researchers pointed out that that in the contemporary globalized setting, making such clear-cut distinctions between what is a domestic vs. a cross-border transaction has become more difficult, if not an illusion (Reynolds, 2015).

Interesting conclusions have been drawn by a research project focused on the dynamics of cross-border acquisition integration based on extensive qualitative material on a total of 166 interviews with 141 interviewees in eight cross-border acquisitions in France, Denmark, Germany, USA, UK and Finland under which managers most often mistakenly ignore motivational, emotional and cultural factors at the expense of financial, strategic and structural factors, which are given disproportionately greater importance (Teerikangas & Satu, 2006, p. 3)

3. Measurement Financial Goals in the Literature

Fiorentino & Garzella (2015) pointed out that probability of M&A success depends on effective synergy measurement model.

According to Zaks research, defining what synergy effects are is multidimensional, affected by the several measurement approaches to M&A performance.

Considering the multiple combinations of how performance is measured it seems difficult to make meaningful comparisons across studies, which explains why findings strongly deviate from each other (Zaks, 2016 p. 101).

The need for deeper research into measurement of financial goals of M&A projects has been raised by many researchers, eg. conclusion from some studies pointed out that each merger and acquisition is unique due to adoption of different performance measures (King et al. 2004) and therefore findings are not comparable across typologies or settings (Bower, 2001) or that important variables highlighted in some M&A literature are omitted and the connectedness among key variables and different stages of the M&A process are not clearly articulated. A multi-disciplinary review examining key success factors in the M&A process needs to consider the links between these variables at different acquisition stages as well as along the M&A process (Gomes, et. al., 2013, p. 14).

According to; Ghosh 2001; Powell & Stark 2005 operating cash flows is the basic measure of the analysis of effects of M&A project. Under a different interpretation of how to present the value of operating cash flows, the literature provides us with an EBITDA description (net profit plus income tax, interest and depreciation or operating result plus depreciation), as an alternative approach to calculating EBITDA.

Hitt conducted research based on 324 M&A implemented on US market and came to the conclusion that the economic performance of the firms formed as a result of M&A tended to increase and concluded that in most cases M&As are motivated by the anticipated synergy (Hitt, 2016).

An important conclusion was drawn by Fakadej, who points out that the investment value is determined from the perspective of a specific investor – the user of the valuation. According to Fakadej, measurement of M&A project depends on the characteristics of the asset, the characteristics associated with the transaction itself and the investor.

In general terms, referring to Ross investment value and fair market value are two terms that can be used when evaluating the value of an asset or entity. Both terms are used regularly in financial analysis and may have different meanings depending on the scenarios in which they are used (Ross, 2022). Main differences between the fair value and investment value in the following:

1. differences in the expectations of future cash flow,
2. synergies associated with the ownership of complementary assets (for example, an appropriate distribution network),
3. transaction costs associated with the use of the asset by the investor, differences in the fiscal position,
4. differences in the perception of risk.

Synergy effects, which are additional benefits gained as a result of merged companies, can be described as incremental profitability or enterprise value creation (Fakadej, 2018, p. 78).

Future value of M&A project cannot be directly observed at the pre-closing stage (before signing investment agreement). That's why investors use multiple different valuation approaches to 'triangulate' what the value of a company should be.

Measurement of financial goals of an M&A project at the pre-closing stage can refer to commonly used valuation methodologies. Under the indicated below measurement methods, (especially in the DCF methodology) the net financial result is derived from quantified financial goals of an M&A project and consists in the future potential results of business combination on business operations.

From the perspectives of both the buy-side (the acquirer) and sell-side (the acquiree), the most frequently used methods of valuation M&A projects are:

1. Discounted Cash Flow (DCF) which provides information about Enterprise Value (EV) and Equity Value and fundamental financial parameters of M&A transaction such as Internal Rate of Return and Net Present Value using the most appropriate discount rate. This approach has its foundation in the present value rule, where the value of any asset is the present value of expected future cash flows on it. The cash flows will vary from asset to asset – dividends for stocks, coupons (interest) and the face value for bonds, and after-tax cash flows for a real project. The discount rate is a function of the riskiness of the estimated cash flows, with higher rates for riskier assets and lower rates for safer projects (Damodaran, 2012, p. 28).

2. Comparable Valuation, where the value of an asset is derived from the pricing of comparable assets, standardized using a common variable such as earnings, cash flows, book value, or revenues. The value of an asset is most often derived from a multiplier calculated for other comparable transactions. The multiple is usually based on a financial metric, e.g. Revenue, EBITDA, Earnings Per Share, EV to EBITDA, EV to invested capital, and market value to replacement value (Tobin's Q) and much more. (Damodaran, 2012, p. 34).

It is important to mention from practical perspectives, that despite its advantages and widespread use of Discounted Cash Flow, the method requires many assumptions and the model is only as good as the inputs included in the model. On the other hand, in many M&A cases finding peer companies which are exactly the same as the target company for Comparable Valuation is hard or even impossible. Thus, it is often used as a confirmatory valuation method for DCF analysis.

Measurement of an M&A project at the post-closing stage is commonly used due to goodwill calculations. According to Hargrave (2023) the process for calculating goodwill is fairly straightforward in principle but can be quite complex in practice. To determine goodwill with a simple formula, take the purchase price of a company and subtract the net fair market value of identifiable assets and liabilities (Hargrave, 2023).

Goodwill = Purchase price of the target company
– Fair market value of assets
– Fair market value of liabilities

The rules on acquisition accounting are changing substantially. From the accounting perspective measurement of the value of M&A deal can be quantified called "Purchase Method", which refers to the assumption that the purchase price is first allocated to tangible assets, and the excess price is then allocated to any intangible assets such as patents or trademarks. Any residual becomes goodwill (a reflection of the difference between the book value of assets of the acquired firm and the market value paid in the acquisition). In an alternative approach called the Pooling of Interest Method, the purchase price never shows up in the balance sheet. Instead, the book values of the two companies involved in the merger is aggregated to create the consolidated balance of the combined firm (Damodaran, 2012, p. 49).

Furthermore, Luty shared research experiences from the Polish market and pointed out that business combinations can be accounted for in various ways. The Polish Accounting Act provides for the possibility of including in the takeover price not only the value of the transferred ownership titles of the acquiring company, but also the acquired shares of the acquiree, or any form of payment whose fair value can be estimated (Luty, 2018, p. 21).

There are researchers who draw attention to the occurrence of negative goodwill as a consequence of the combination often called a 'bargain purchase' (Dunn, et al.,2011).

If there is a surplus of the fair value of the acquired net assets over the purchase price, we are dealing with a situation in which the entity as a whole is worth less than it would result from the sum of the values of its assets. The Accounting Act (Article 44b, sections 11–12) indicates the method of determining the amount of subsequent settlement of this difference but does not contain a substantive definition. In international accounting standards (IFRS 3) and American standards (SFAS 141R), the term „negative goodwill" has been abandoned altogether in favor of the phrase „bargain gain" (Grzybek, 2018, p. 48).

After the acquisition is complete, the target firm's assets can be reappraised, following strict accounting rules, to fair value to estimate the adjusted

book value of equity. Depending on how the acquisition is accounted for, the difference between the acquisition price and the adjusted book value of equity will be recorded as goodwill on the acquiring firm's books or not be recorded at all (Damodaran, 2012, p. 663).

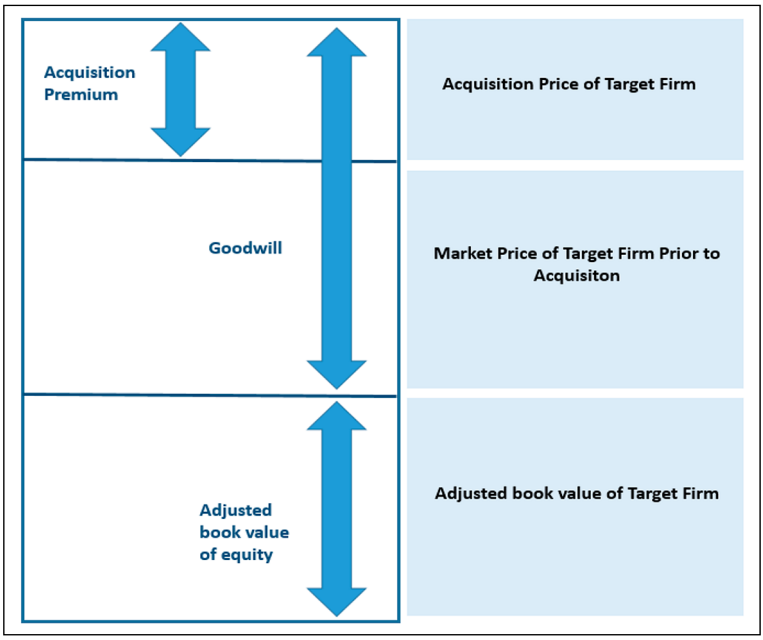

Figure 15.2. Decomposition of the company's value
Source: (Damodaran, 2012, p. 663).

Goodwill is a commonly used tool for measurement of M&A synergies and many researchers such as Yan and Xiufang (2016, p. 72–74) pointed out that calculation of goodwill in M&A transactions has a significant positive impact on the improvement of executive compensation after M&A, nevertheless it is worth mentioning which the researchers skepticism to goodwill calculations.

Xie stated that M&A goodwill, as an intangible asset accompanied by merger and acquisition, has relatively low transparency in the process of value confirmation. At the corporate level, M&A goodwill is likely to be manipulated by managers to achieve their own interests (Xie et al, 2020 p. 3388).

Zheng Haiying et al. (2014) believed that the company paid higher goodwill could improve the current company performance, and goodwill cost had a significant negative correlation with the company performance in the future.

Furthermore, Masters-Stout et al. (2008) suggested dependence between impairment of goodwill and pressure on results imposed on senior executives.

According to their research, goodwill is likely to exist as a tool for companies to whitewash accounting information in order to increase company executives' salaries which are usually linked to company profits (Masters-Stout et al. 2008, p. 1370–1383). It also confirmed by Dunn, Kholbeck, Smith (2011) who also pointed out that negative goodwill can be used for financial result manipulation in order to protect against a decrease in the financial result or a generated net loss (Dunn, et al., 2011). Moreover, some researchers asserted that goodwill also does not reflect business combination in accordance with the economic sense, but rather treats it as a purely technical calculation necessary for the balance sheet settlement of transactions (Rak & Turyna, 2015, p. 26).

There are many researchers who stated that Enterprise Value (EV) is a consequence of the disclosure of the merger plan, (hence benefits resulting from the business combination) and the goodwill, e.g. Jennings (Jennings, 1996 and Henning (Henning, 2000).

Another measurement of financial goals of M&A projects is the **ROA** which is a simple division of total assets and net income, in which the 'operating result' variable is intended to answer the question if the disclosed goodwill depends on the operating profit or loss (Luty, 2018, p. 24).

Kalinowska & Mielcarz (2014) conducting research on the Polish market also pointed out ROA as effective measurement of post-transaction financial results (Kalinowska & Mielcarz, 2014, p. 739–746).

Nevertheless, E. Tang. pointed out that in this sector M&As mainly aim to achieve synergy and economies of scale, challenging the assertion that the inclusion of traditional financial indicators (ROA, ROE, ROS, and so on.) creates problems for the analyses (Tang, 2015).

All of the above-mentioned approaches to assessing the effects of M&A relate mainly to the long-term effects of the M&A. A different approach is indicated by Luty, who proposed net working capital as short-term financial measurement, which in turn affects the financial decisions made by companies. According to Luty, thanks to its use, it is possible to assess the relationship between credit (receivables), financial (payables), operational (inventory processing) and cash (cash conversion cycle) policies of a combined company (Luty, 2018).

Research conducted by A. Betzer et. al. (2015) pointed out share price fluctuations and changes as chosen performance indicators based on changes in stock price and in the observed measure from the financial statement (Betzer et al., 2015).

4. The Business Case for Measurement of Financial Goals of a Cross-Border Merger

The case study described in the monograph concerns complementing the business model of a vertically integrated capital group with a dominant revenue stream generated from traditional industrial areas by acquiring a company operating in the emerging market of prosumer electricity services in the cross-border model.

Before the cross border merger, business model of the acquiring company was based on the production of electrotechnical power devices, including in particular generation and energy transmission equipment such as generators, transformers, rectifiers, converters and transmission equipment such as overhead lines, cable lines etc.

The strategic decision to transform the business model by entering a new segment of prosumer electricity services, shown in Figure 15.3, was dictated by changes in the regulatory environment. It consisted in increasing electricity generation in the country's power system based on the so-called prosumers, i.e. private entities that simultaneously consume and generate electricity by using Renewable Energy Sources (RES) as generation sources. Increasing the attractiveness of this segment for business is related to two fundamental market factors:

1. Support systems dedicated to the development of this sector increasing consumer demand for prosumer components such as photovoltaic installations (PV).

2. Significant increase in the market prices of energy which contributed to increase the overall value of prosumer components as a mitigant of high energy yield prices (due to increasing consumer demand for heating devices, in particular heat pumps and PV).

The use of reverse engineering principles when selecting an acquisition target by defining the integration goals at the very beginning (at the pre-selection stage) has two fundamental advantages:

1. it enables precise definition of the desired organizational structure, avoiding the so-called „transactional wandering" consisting in matching the organization to the acquisition target, and not the acquisition target to the target organizational structure, and

2. enables the inclusion of persons responsible for the correct conduct of post-transaction integration to the stage of selecting the acquisition target for a more accurate analysis of project risks related to the integration phase at an early stage. In addition, defining the PMI goals agreed with the integration team can be naturally converted into KPIs set for these people after the acquisition of the selected target.

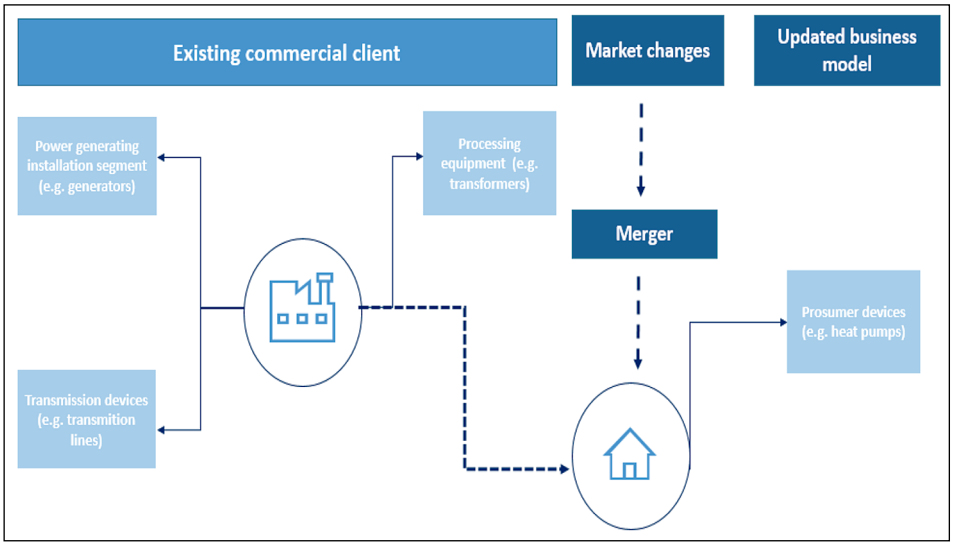

Figure 15.3. Business case for cross-border M&A
Source: own study.

After projecting desired outcomes coming from a cross-border transaction, establishing the measurement of financial goals of the M&A project is one of the most important stages in not only the PMI phase, but from the further perspective of the entire project. Especially if it is carried out in the cross-border formula, where the number of potential acquisition targets is greater than in domestic M&A projects.

The key measurement of financial goals described in Table 15.1 refers to both: (i) actual financial parameters such us EBITDA or Sales revenue and (ii) Enterprises Value – based on long term financial projections actualized under current specific project assumptions. The implicated outcomes from calculations are part of PMI measurement of impact of acquiring company and should be compared with projections calculated at the stage of valuation of payment of the price for the acquired company. From the managerial perspective it is crucial to link long-term financial projections with the current financial performance.

If deviations from the values calculated at the transaction stage are identified, it is necessary to determine whether they result from changes in the macro environment, which depend to a minimum extent on the managers of the integration phase (e.g. increase in interest rates), or from typical areas requiring management.

It is worth mentioning that financial ratios are ultimately strongly related to financial results. This means that failure to achieve financial ratios will translate into deterioration of financial results and vice versa.

Table 15.1. Key measurement of financial goals in described business case

Key measurement of financial goals (Project KPI)	Description	Specific goal of the M&A project addressed by particular measurement
1 **Enterprise Value (EV)/ EBITDA**	The valuation was based on the DCF (discounted cash flows) method in three scenarios: (i) base case including maintaining the acquired company's market position in the future and its effective response to market changes with reflection of 50% of estimated value of synergies, (ii) optimistic including full reflection of synergies and (iii) pessimistic including 15% drop of revenue in comparison to base case. The market WACC of 9.50% was used for the valuation. The valuation was based on the DCF (discounted cash flows) method in three scenarios: (i) base case including maintaining the acquired company's market position in the future and its effective response to market changes with reflection of 50% of estimated value of synergies, (ii) optimistic including full reflection of synergies and (iii) pessimistic including 15% drop of revenue in comparison to base case. The market WACC of 9.50% was used for the valuation.	The EV ratio is most influenced by the forecast of the income and cost assumptions and the amount of the discount rate adopted (in our case, the amount of the market WACC), which allows to illustrate the company's value in the long-term horizon. On the other hand, the EBITDA parameter calculated for each measurement year present current ability to generate positive cash flow. Therefore, the EV / EBITDA ratio allows managers to monitor whether the company's market value after the transaction, reflecting both the long-term ex ante projection and the post factum actual value of EBIDTA does not deviate from the assumptions made at the pre-transaction valuation stage.
2 **Enterprise Value (EV)/ Sales**	As in the previous case, we measure the long-term value of the eenterprise measured by Enterprise Value parameter, and relate it to the value of sales generated from the new business segment.	This parameter allows to measure the company current ability to generate sales revenues with market and operational assumptions addressed in the valuation at the Enterprise Value.
3 **Project IRR**	IRR is a discount rate for which the NPV (Net Present Value), i.e. the present value of the investment, equals zero (NPV=0). Thus, the IRR is the interest rate at which the economic break-even point is reached, i.e. the present value of expenses will equal the current inflows	Monitoring the IRR level of the project enables the assessment of profitability by comparing the value of the acquisition price with the company's long-term financial projection. At the same time, with the company's variable exposure to debt financing exposure, the IRR measure makes it possible to compare the company profitability with the level of debt and to assess the difference between this profitability and the risk-free rate (e.g. the profitability of state treasury bonds).
4 **EBITDA margin from new segment of business**	Calculated as the quotient of: operating profit before financial operations, taxation and depreciation (EBITDA) and the level of sales revenue.	The ratio allows to determine the ratio of operating profit to total operating revenue, and therefore what part of operating revenue is allocated to cover the costs of products, goods and materials sold.

Source: own study.

5. Conclusions

Cross-border M&A projects can be a source of generating added value for enterprises in a globalized economy. However, M&A projects are projects with a very high risk of failure. Reports of business advisors indicate that statistically less than four out of ten M&A transactions are considered successful.

The specificity of cross-border transactions imposes additional difficulties for managers due to a different organizational culture, different formal and legal environment and often other business conditions that characterize cross-border M&A projects. Thus, the risk of failure is increased.

The analysis of the literature on the subject shows that the risk of failure could be mitigated based on proper designed system of measurement of financial goals of an M&A project (assumed measured ratios, frequency of measurement as well as system of corrections in the event of identifying deviations). Designation system for measuring the financial goals of an M&A project is a multidimensional activity and depends, inter alia, on the investor's perspective, the goals set for the M&A project and the structure of the transaction.

Among the financial parameters measuring the achievement of the financial goals of the M&A project, the researchers recommend an analysis of the current financial result achieved by enterprises, such as EBITDA, but also a long-term discounted cash flow (DCF) analysis, or in the case of having data for comparable transactions, based on a Comparable Valuation. It is worth mentioning that the valuation of an M&A project based on DCF most often refers to the transaction phase of the project (before closing the transaction), but it can also be a valuable measurement ratio for the performance of the acquired company after the transaction based on updated data. Then, the differences in the valuation at the pre-transaction stage and in the post-transaction phase may illustrate whether the M&A project achieves the assumed goals.

Another approach indicated goodwill as one of the basic and commonly used methods of measuring the performance of post-closing M&A projects. Nevertheless, some researchers pointed out that the value of goodwill can be manipulated by managers in order to achieve their own interests.

Further effective measurement of post-transaction financial results could be ROA or another performance indicators based on the financial statement such as ROS or ROE or observation of changes in stock price in the case of a listed company.

Measurement of financial goals of the M&A project can be carried out using the Balanced Scorecard (BSC), which, apart from the financial area, assesses a number of parameters affecting clients, operational aspects of business and ability company for innovation and learning.

The conclusions obtained from the described case study suggest that effective management of the integration phase under the cross-border project is based on defining the goals of the integrated entity after the M&A transaction, before selecting the target investment target and appropriate measurement model.

Approach based on defining the integration goals at the pre-selection stage makes it possible to avoid transactional erring consisting in matching the organization to the acquisition target, and not the acquisition target to the target organizational structure. It also provides better foundations for developing the scope of due diligence before making an acquisition, enables better structuring of the entire M&A transaction and provides a better basis for monitoring the PMI phase.

Based on conclusions from the described case study, it is recommended to use indicators such as Enterprise Value / EBITDA, Enterprise Value / Sales, IRR and the EBITDA measure achievement of M&A goals. In particular, the Enterprise Value / EBITDA and Enterprise Value / Sales indicators relate the long-term projection of the company's results to the current performance, and thus constitute a valuable measure of the M&A project's success.

The monograph is an introduction to further, in-depth research conducted by the authors on the management of the Post Merger Integration phase.

Research limitations

Conducting research on the key factors of structuring management of the PMI phase is severely limited due to the specific approach of various entities to the challenges faced and various business goals the generation of which may lead to erroneous conclusions.

Additionally, due to the competitive environment in which they operate, most entities, do not make publicly available information on managing the PMI phase.

Generalization of the approach to PMI management may lead to statements of conclusions whose practical application may not bring the desired effect related to improving the management of the PMI phase.

Policy recommendations

The country strategy should support enterprises implementing cross-border projects, as they give domestic enterprises a chance to achieve unique competitive advantages. The support may take the form of financial instruments supporting and improving the financial parameters of a cross-border M&A, in particular, in sectors strategically important for the economy.

On the other hand, the Country should take care to limit the activity of one another country in the area of acquisition of domestic enterprises so as not to

cause a situation in which, due to the high intensification of this type of transactions, it becomes indirectly dependent on the economy from another nation.

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Chapter 16

Entrepreneurial Resilience in the Face of Crisis Conditions

Angelika Wodecka-Hyjek, Olga Yaroslavivna Malinovska

1. Introduction

Contemporary understanding of entrepreneurial behaviors in organizations requires a comprehensive approach that considers not only proactivity, innovation, and risk-taking but also analyzes how entrepreneurs and organizations cope with difficulties and setbacks.

Since entrepreneurs regularly encounter difficulties and challenges in the process of starting new ventures and conducting business, their ability to adapt and respond to adversity is of great interest to entrepreneurship researchers. To achieve sustainable success as entrepreneurs, they need the capacity for "resilience," which enables them to overcome critical situations and become stronger as a result of failures and crises. In a general sense, "resilience" refers to how well a system withstands threats and how quickly it returns to its original state after disruptions. However, the term "resilience" has different meanings depending on the system under study (Madni & Jackson 2009, cited in Duchek, 2018). It can be applied to the study of individuals, regions and cities, societies/communities, socio-ecological systems, organizations, or networks (Duchek, 2018). "Resilience" relates to the building and development of capabilities that enable coping with crisis situations and socio-organizational development based on existing internal and external relationships. Entrepreneurship promotes the development of such capabilities (Sienkiewicz-Małyjurek, 2020).

Currently, in entrepreneurship research, often as a result of crises that have occurred, there is also an indication of the existence of "entrepreneurial resilience", where resilience is understood as one of the key characteristics of entrepreneurship (Duchek, 2018; Sienkiewicz-Małyjurek, 2020). The concept of "entrepreneurial resilience" includes an analysis of the processes entrepreneurs use to develop and leverage their abilities to adapt and respond to the difficulties they encounter in their entrepreneurial roles. "Resilience" has become a common area

of interest in management research and is increasingly becoming a crucial concept in entrepreneurship research.

The aim of this paper is to present the assumptions, essence, and significance of the concept of "entrepreneurial resilience" as a result of the development of the perspective on entrepreneurship research and its specificity in the face of challenging and crisis situations.

2. Multifaceted Understanding of Entrepreneurship

Entrepreneurship is a widely recognized and used concept in both scientific and public discourse. Entrepreneurship is primarily associated with the establishment and operation of businesses, but its scope of understanding is much broader. Understanding entrepreneurship goes beyond a set of procedures and advice that aid in starting and running a company; it involves specific behaviors (considered from the perspective of the market, society, and individuals) or a set of competencies that help consciously and intentionally transform an idea into an implemented business concept (Kurczewska, 2013). As the field of entrepreneurship has developed over the past decades, research has evolved from empirical studies of entrepreneurs towards more contextual and process-oriented approaches, although a general theory of entrepreneurship has not yet emerged (Kuratko & Hodgetts, 2001). S. Shane and S. Venkataraman define entrepreneurship as any activities that consist of the identification, evaluation, and exploitation of opportunities to introduce new products and services or new ways of organizing, new markets, or resources. Furthermore, they assume that the existence of market opportunities is a prerequisite for entrepreneurship, and inherent in the entrepreneurial process is risk-taking; there are differences in the perception of market opportunities among different individuals; the entrepreneurial process requires organization in terms of creating new resource combinations and necessitates innovation, not necessarily of a breakthrough nature (Shane & Venkataraman, 2000; Shane, 2003). Entrepreneurship, understood as engaging in economic activity and effectively managing it in conditions of risk and competition, is an inherent feature of managing societies and is dependent on economic, technical, cultural, social, ecological, legal, and political conditions shaped in the historical process of development. Therefore, in the literature, entrepreneurship is increasingly regarded not only as an economic phenomenon but also as a psychosocial-cultural phenomenon rooted on one hand in the needs and motivations of the entrepreneur and on the other deeply embedded in its environment (Bratnicki & Strużyna, 2001). One of the key elements of entrepreneurship is the ability to identify and exploit market opportunities and understand the needs and

demands of customers. Introducing innovative solutions and using new technologies can help entrepreneurs gain a competitive advantage. At the same time, entrepreneurs should be aware of the risks associated with entrepreneurship and have the ability to make informed and effective decisions. Through entrepreneurship, one can achieve not only financial but also personal and social success, as it allows for the creation of new jobs, innovative products and services, and contributes to economic growth (Barot, 2015).

There is a continuous need to develop a more comprehensive theoretical understanding of entrepreneurship that takes into account theoretical variables and the relationship between these variables (Wortman, 1987). Certainly, studying process-based characteristics such as resilience will be valuable in further developing the concept of an "entrepreneur" (Hedner et al., 2021). Resilience is important for individuals in almost all professions, as work-related demands are increasingly felt in other areas of life, such as family life (Garrett, 2021), and this trait takes on special significance in the face of increasingly frequent crisis situations.

3. Assumptions and Essence of the Concept of Entrepreneurial Resilience

The concept of "entrepreneurial resilience" involves the analysis of processes that entrepreneurs use to develop and leverage their abilities to adapt and respond to difficulties encountered in their entrepreneurial roles (Garrett, 2021).

"Entrepreneurial resilience" is defined as the ability of entrepreneurs to anticipate potential threats, effectively cope with unexpected events, and adapt to changes in order to increase their survival and growth prospects (Duchek, 2018). Most research in this area focuses on the individual level, analyzing traits of entrepreneurs, including flexibility, motivation, perseverance, optimism, and experience (Duchek, 2018; Sienkiewicz-Małyjurek, 2020). In the management perspective, "entrepreneurial resilience" is defined as the process that an entrepreneur uses to develop and utilize their abilities to adapt and respond to difficulties encountered in their entrepreneurial role (Williams et al., 2017). Researchers often use concepts such as stamina, perseverance, balance, or self-efficacy to explain the factors shaping resilience in some entrepreneurs and their organizations (Hamedi & Mehdiabadi, 2020). In the case of family firms, entrepreneurial resilience includes intergenerational learning and development during leadership succession (Zehrer & Leiß, 2019). Entrepreneurial resilience is crucial in explaining behaviors aimed at overcoming discomfort and uncertainty and learning from past failures (Hamedi & Mehdiabadi, 2020). It is a new element

that strengthens entrepreneurial orientation. To build a sustainable enterprise, resilience is essential (Elia et al., 2021).

The concept of "resilience" takes on different meanings in various fields, including entrepreneurship. Similarly, there are different levels of analysis for the concept of resilience for entrepreneurship researchers. For example, team-level resilience is important for startup teams, and the contribution of entrepreneurial activity to the resilience of organizations, and even regions, has significant research potential. The concept of "entrepreneurial resilience" is continuously evolving, and research on context-specific resilience has a multifaceted nature. "Entrepreneurial resilience" can be perceived as a set of abilities, a process, and an outcome. The notion of resilience with its multifaceted definition contributes to the pluralistic character of resilience in the social sciences, which can facilitate the development of knowledge in this area (Garrett, 2021).

Ungar et al. (2007) identified seven factors influencing the degree of entrepreneurial resilience, classifying them as external and internal factors. External factors include access to material resources and access to supportive relationships. Internal factors encompass the development of a desirable personal sense of self, experiences of power and control, adherence to cultural traditions, experiences of social justice, and experiences of a sense of cohesion with others. Access to material resources is related to the availability of financial, educational, medical, and employment assistance and/or opportunities, as well as access to food, clothing, and shelter. Access to supportive relationships relates to relationships with significant others, peers, and adults within one's family and community. Development of a desirable personal sense of self pertains to a desirable sense of one's self as having a personal and collective sense of purpose, the ability for self-appraisal of strengths and weaknesses, aspirations, beliefs, and values, including spiritual and religious identification. Experiences of power and control are linked to experiences of caring for one's self and others, the ability to affect change in one's social and physical environment to access health resources. Adherence to cultural traditions involves adherence to or knowledge of one's local and/or global cultural practices, values, and beliefs. Experiences of social justice encompass experiences related to finding a meaningful role in one's community that brings acceptance and social equality. Experiences of a sense of cohesion with others relate to balancing one's personal interests with a sense of responsibility to the greater good, feeling a part of something larger than one's self socially and spiritually.

4. The Significance of Entrepreneurial Resilience in the Face of Crisis Conditions

A crisis is perceived as a surprising event that limits the time available to develop a response and poses a threat to critical objectives. A crisis brings about a range of adverse economic and social consequences. It not only destroys economic potential and eliminates weak market players but also disrupts many elements and values that co-create the socio-economic reality. Such a state threatens a company's survival, hinders the achievement of its goals, reduces the time available for remedial actions, thus creating conditions of high pressure (Hermann, 1963).

In addition to the negative effects of crises, as demonstrated by the experiences of the pandemic, such as reduced economic activity, temporary business closures, workforce shortages, and supply chain disruptions (Belitski et al., 2021), crises can also serve as opportunities for development (Chisholm-Burns, 2010). They can trigger changes in business models (Archibugi et al., 2013) or significant redesign of existing solutions (Kuckertz & Brändle, 2021). Economic crises and periods of high unemployment can become incentives for individuals to become self-employed in response to a lack of other opportunities (Dawson & Henley, 2012). Furthermore, crises may reveal new opportunities that attract entrepreneurs. Research results also indicate that necessity-driven entrepreneurship is ineffective during a recession and innovativeness and recognizing opportunities are more critical for success during economic downturns than during periods of prosperity (Devece et al., 2016).

Market determinants shaping entrepreneurship can also be considered in the context of crisis-induced effects. Belitski et al. (2022) identify post-pandemic effects on entrepreneurship and categorize them into four categories: long- and short-term economic effects; the use of digital technology, digital skills, and robotization; entrepreneurship financing and non-economic effects. Long- and short-term effects emphasize the need for research on innovation, entrepreneurship, and firm outcomes after a crisis, analyzing wage disparities, identifying differences between small and large firms, as well as self-employed individuals and corporations regarding the impact of the crisis. The use of digital technology, digital skills, and robotization concerns the combination of the effects of digitization and entrepreneurship, especially regarding the use of digital platforms, digital tools, the development of digital skills, and their impact on employment, firm functioning, and the production and sales process. Networks of venture capital and "angel investors" will play an essential role in financing entrepreneurship, and research should intensify to differentiate between necessity-driven and opportunity-driven

entrepreneurs. Furthermore, research should focus on how sources of financing affect long-term entrepreneurial outcomes, survival, and high growth. Regarding non-economic effects, the emphasis is on the impact of entrepreneurs' psychological well-being on the development of their businesses. Research should be oriented towards examining the effects, including psychological effects (such as burnout) and stress-coping techniques. Both entrepreneurs who have quit and those who have found new opportunities and continue their entrepreneurial careers should be studied.

These identified conditions are likely to determine future entrepreneurial initiatives and activities, and their role is closely related to resilience. K. Sienkiewicz-Małyjurek (2020) suggests that concepts of resilience and entrepreneurship in crisis management can contribute to increased ability to cope with threats and crisis situations. In her opinion, which is based on the analysis of the literature, resilience in crisis management is a key concept that explains:

- why some communities cope better with threats, as there is a research gap regarding its connection with entrepreneurship.
- there is a need for in-depth research on the use of resilience and entrepreneurship concepts in crisis management, as they can contribute to better coping with social challenges.
- previous research and analysis indicate that entrepreneurial resilience in the examined area manifests through implementing changes and development through available resources, depending on the type of threat and the crisis management phase.
- it is also noted that external factors influence the ability to build resilient entrepreneurship, but less attention has been paid to how individuals, organizations, or entire communities respond to threats and crisis situations.

A. Kwiotkowska (2022) observes that Ates & Bititci (2011) point out organizational resilience as the ability to anticipate key opportunities arising from emerging trends and maintain stability in a turbulent environment. In the perspective of a company, crises are sudden, unexpected, and unforeseen events extended in time and space that can be overcome through strong resilience. Entrepreneurial orientation, operationalizing entrepreneurship, is a strong motivation in conducting business activities and a key factor in resilience. It helps companies better understand changes caused by sudden shocks, analyze the environment, and develop appropriate remedial measures. Entrepreneurial orientation highlights tendencies to engage in innovation, take on risky ventures through proactive behavior to overcome competition (Kwiotkowska, 2022).

The relationship between resilience and entrepreneurship is bidirectional. Resilience, as a characteristic of individuals, organizations, communities, or regions, encourages taking on new challenges and facing adversities, stimulating entrepreneurial behaviors. In turn, such behaviors can have various outcomes, leading to success or failure, and are likely to constitute new knowledge that strengthens resilience (Sienkiewicz-Małyjurek, 2020).

5. Conclusion

The concept of "entrepreneurial resilience" pertains to the ability of entrepreneurs and businesses to adapt, cope with difficulties, and thrive in challenging conditions, including crisis situations. Contemporary businesses must be prepared for various types of crises, such as economic slowdowns, natural disasters, or pandemics. In this context, entrepreneurial resilience becomes a crucial trait that can lead to success in difficult times and help companies survive and continue their operations. The perception of entrepreneurial resilience can encompass various actions and perspectives. An essential element of responding quickly to changes, driven by factors like a crisis, must be the organization's adaptability and flexibility. Companies that demonstrate entrepreneurial resilience are often more innovative than others. They can find new ways to deliver products and services and adjust their business models to changing customer needs. Entrepreneurial resilience is not just about short-term survival; it must have a long-term focus, as evidenced by actions such as leveraging new opportunities arising from digitization, investing in developing new skills and competencies among employees to prepare them for dealing with unexpected situations, as well as continuously monitoring environmental needs and adapting to new market trends.

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Chapter 17

An Overview of Controlling Implementation Methodologies in Enterprises

Anna Kołodko, Janusz Nesterak

1. Introduction

Recent economic challenges related to the COVID-19 pandemic, geopolitical tensions, technological advancements, including artificial intelligence, and climate change serve as catalysts for constant adaptation within companies. Managers, being aware of the complex economic processes, seek new management tools that will facilitate their decision-making in terms of growing costs and risks. In this context, controlling, despite huge differences in its definition, is gaining increasing significance.

The analysis of the Polish and English literature revealed that controlling, including managerial controlling, has not yet developed a coherent and comprehensive methodology for managing the implementation process. This deficiency acts as a significant barrier limiting the implementation of controlling in practice, particularly in small and medium-sized companies. Importantly, the research results indicate that among small and medium-sized companies, the implementation of controlling can yield significant benefits, both for the companies themselves and for the overall economy (Ahmad, 2017). The lack of implementation methodologies can pose a significant limitation for these firms, as they may not have the resources to undergo an implementation process that does not ensure goal achievement and is prolonged. As a result, they often choose not to embrace the concept of controlling.

The aim of the article is a thorough literature review of methodologies for controlling the implementation and formulation of directions and guidelines for future research. In this paper, we proposed a systematic approach to research implementation methodologies in controlling and identified three fundamental research groups, which are discussed in the paper: (i) general methodologies in the third section, (ii) methodologies focused on the implementation of selected

cost management systems in the fourth section, and (iii) methodologies based on case study analyses in the fifth section. In conclusions, we formulate assumptions concerning the identified research gap, namely the absence of a standardized methodology for controlling implementation and outline potential avenues for future research in the field.

2. The essence and evolution of controlling

The concept of modern controlling was born in response to the Great Economic Crisis of the 1920s in the United States. At that time, larger companies, followed by medium and smaller ones, established the role of a „controller" responsible for comprehensive financial management, encompassing planning, reporting, analysis, advisory, tax optimization, external reporting, internal control enforcement, and research of economic and political environment (Mocanu, 2014; Nesterak, 2015b; Perović & Vujičić, 2015). The concept of controlling reached Western Europe for the first time in the 1950s/1960s with the branches of American companies, but its development coincided with the crisis of the 1970s (Nesterak, 2015b; Perović & Vujičić, 2015). In Central and Eastern European countries, controlling emerged only after the fall of the communism and the introduction of a market economy in the early 1990s. Following Poland entry into the European Union, the surge in market competition further enhanced Polish companies to cut costs and embrace new challenges making controlling very compelling for the well-informed managers (Nesterak, 2015b).

Over the course of its 100-year existence, controlling has evolved from a business concept into a well-established scientific discipline; however, it has not received a unified definition (Schäffer & Binder, 2008). The ambiguity surrounding the term „controlling" is linked to different interpretations of the controller's role in a company, ranging from that of an accountant to a top manager, as well as variations in understanding the discipline itself (Mocanu, 2014; Nesterak, 2015b; Perović & Vujičić, 2015). In the broadest sense, controlling can be defined as the process of managing a company through planning, control and reporting at every organizational level, aimed at achieving results and gaining a competitive advantage. The goal of controlling is to ensure the long-term development of the company and, in times of economic crisis, its survival (Nesterak, 2015b).

Nesterak (2015b) introduces the concept of managerial controlling in Polish literature, providing a clear distinction between managerial controlling and reporting controlling. Within the realm of managerial controlling, controllers assume a wide range of competencies and undertake managerial functions, including decision-making. Weber and Nevries (2010), in their highly regarded

book embraced by both controlling researchers and practitioners, shed light on the transformation of the controller's role from a secondary position within the company to a coveted partner for top-level management, including the CEO. Similarly, Vuko and Ojvan (2013) depict the evolution of the controller's role from an information provider to a guardian of management rationality. As the role of controlling continues to evolve, there is a significant increase in expectations regarding the impact of its implementation.

According to Kołodko & Kowalski (2020), to fulfil its intended managerial role, the implemented controlling system should encompass all the intricacies of the organization's business processes, spanning all phases from product development to sales and maintenance. Noteworthy, a consistent methodology for financial result reporting is essential for reliable decision-making. Financial models allow organizations to establish standardized practices for reporting financial outcomes, which facilitates accurate performance analyses and comparisons across different levels of business activities, e.g. company level, product level, contract level, or client level. Such granularity provides valuable insights into the profitability and viability of specific business segments, key from the point of strategic decision-making. The designed system should also support budgeting and financial planning processes for consistent comparison of actual and planned values, identifying deviations, and allowing for necessary adjustments. Furthermore, it should accurately allocate indirect costs and capture cause-and-effect relationships as accurately as possible, ensuring that costs are appropriately assigned to specific profit or cost centers, to enable organizations making informed decisions on resource allocation and effectively manage costs. Moreover, it should serve as a basis for managerial reward and incentive systems. By aligning performance metrics with organizational goals, the system motivates and rewards managers for achieving desired outcomes, fostering a culture of accountability and continuous improvement. Such a system by providing accurate and timely financial information can identify cost-saving opportunities, optimize resource allocation, and enhance the overall operational efficiency driving growth business and success.

Controlling has been functioning in economic practice for years, and it continues to be a central focus for companies and management practitioners. Importantly, the present economic conditions have led to an increasing number of businesses, including medium-sized and even small enterprises, turning to controlling solutions. Numerous studies on the barriers to controlling development highlight the lack of implementation methodologies and concerns about the failure of implementation projects. All of these factors contribute to the ongoing relevance and importance of research on implementation methodologies for the advancement of the discipline.

3. General methodologies in controlling implementation

General methodologies are research studies that result in the proposal of universal and comprehensive procedures aimed at implementing controlling within a company. The analysis of Polish and English literature reveals propositions from less to more complex approaches towards controlling implementation. The differences in approaches, mostly general in nature, depend on the context of the implementation.

In their three-stage controlling implementation procedure, Nowosielski and Marczak (Nowosielski & Marczak, 1996) especially stress the importance of conducting multiple analytical and design tasks to create detailed guidelines for the implementation. Świderska (2017) emphasizes that the controlling system should be characterized by flexibility and multidimensionality, allowing for the association of costs with any management object, and proposes three main stages in controlling implementation: (I) creating the structure of the model, determining who requires cost information and for what purpose, identifying cost objects; (II) selecting a model powered by financial and non-financial data capable of providing cost information about the objects identified in the first stage; and (III) providing cost information about the identified objects (Świderska, 2017).

More stages in controlling implementation are described e.g. by Deyhle & Olech (1994) – seven, Mykhaylychenko & Tokareva (2016) – eight, and Marciniak (2004) – nine. The synthetic representation of stages in designing controlling by Marciniak (2004) is presented in Figure 17.1. Deyhle & Olech (1994) emphasized as key aspects in their implementation procedure: multidimensional cost classification, decentralized management structure, establishment of cost and profit centres, creation of responsibility centres, development of organizational principles, integration of operational and strategic planning, and continuous assessment of fulfilled tasks.

According to Mykhaylychenko and Tokareva (2016), it is important to consider that there is no universal approach to implementing controlling in an enterprise as each company has its own unique development strategy, management vision, and relationships with its stakeholders. Additionally, factors such as technological characteristics and the market position of the company can influence its organizational structure and mindset. They outline a general eight-stage instruction for controlling implementation: (i) the preparatory stage of implementation of the controlling mechanism; (ii) the stage of ensuring continuity of mechanism operation; (iii) the stage of the formation mechanism of the organizational structure; (iv) the information phase of controlling mechanism; (v) the phase of forming controlling instruments; (vi) the analytical phase; (vii) the research stage; and (viii) the final stage. The stages are described in Table 17.1.

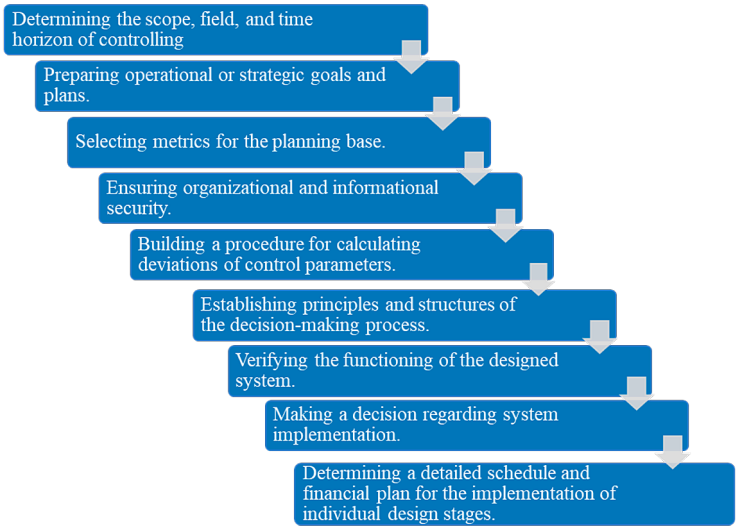

Figure 17.1. Stages in the implementation of controlling according to Marciniak (2004)

Source: designing based on Marciniak (2004).

Table 17.1. General instruction for controlling implementation according to Mykhaylychenko and Tokareva (2016)

Implementation stage	Description
I. The preparatory stage of implementation of the controlling mechanism	involves making decisions regarding the implementation of the controlling mechanism in business management, forming a database of business units participating in the mechanism, developing and studying the purposes of the controlling mechanism, and specifying the placement of controlling in the organizational structure
II. The stage of ensuring continuity of mechanism operation	includes providing technical support for the operation of the controlling mechanism, managing information for controlling operations, and ensuring the proper functioning of the controlling mechanism through proper documentation
III. The stage of the formation mechanism of the organizational structure	involves the formation of the organizational structure for the controlling mechanism, defining the functional responsibilities of the participants in the mechanism and establishing relationships between the operators involved
IV. The information phase of controlling mechanism	involves forming a database of the business units participating in the mechanism, organizing data for analysis, and conducting daily monitoring of the regulatory framework
V. The phase of forming controlling instruments	includes defining the indicators that are monitored in the operation of the controlling mechanism, using the enterprise development budget as the main planning tool, and utilizing the cost-effective economic and production control as the primary tool for monitoring the functioning of the mechanism
VI. The analytical phase	involves conducting daily monitoring of the targets set for the units involved in the controlling mechanism, analyzing absolute and relative deviations of indicators compared to planned values, and analyzing the actual conditions of the enterprise
VII. The research stage	includes determining the external and internal factors influencing the enterprise, updating the parameters of the enterprise, and constructing a multilevel model for optimizing control
VIII. The final stage	involves evaluating the effectiveness of the controlling mechanism's implementation, assessing the achievement of strategic goals by the enterprise, developing alternative business management approaches, and providing recommendations for improving the controlling mechanism

Source: prepared based on (Mykhaylychenko & Tokareva, 2016).

Nesterak (2015a) proposed a four-stage implementation procedure for managerial controlling with supporting information systems and tools. The four stages include: (I) analysis of preliminary conditions for the implementation of managerial controlling, (II) defining company goals in the process of implementing managerial controlling, (III) designing and implementing managerial controlling, and (IV) implementing information systems that support managerial controlling. Each stage is elaborated on by the description of proposed actions (from three to eight), controlling methods and tools that can be used at each stage of the implementation process (Table 17.2), as well as description of the expected outcomes from each stage.

Table 17.2. Stages for managerial controlling implementation according to Nesterak (2015a)

Implementation stage	Controlling methods and tools
I. Analysis of preliminary conditions for the implementation of managerial controlling	relationship map, cross-functional process map, value stream mapping
II. Defining company goals in the process of implementing managerial controlling	SWOT analysis, Balanced Scorecard (BSC), SMART model
III. Designing and implementing managerial controlling	cost accounting selection, Activity Based Costing (ABC), Budgeting and variance analysis, Multiblock and multidimensional cost margin calculation, breakeven point (BEP)
IV. Implementing information systems that support managerial controlling	business process modeling, Business Performance Management, MetaPlan method, Qlik View methodology, business systems planning method, Project Milestone Method (PMI) method, waterfall model, incremental model

Source: prepared based on (Nesterak, 2015a).

In the first stage, which is the analysis of preliminary conditions, methods such as the relationship map, cross-functional process map, and value stream mapping are proposed by Nesterak (2015a) (Table 17.2). These methods help in understanding the interdependencies between different functions and processes within the organization, identifying areas of improvement, and optimizing the value stream. The second stage focuses on defining company goals using methods like SWOT analysis, Balanced Scorecard (BSC), and the SMART model. SWOT analysis helps in identifying the organization's strengths, weaknesses, opportunities, and threats, enabling better goal setting. The Balanced Scorecard provides a comprehensive framework for setting and tracking strategic objectives, while the SMART model ensures that goals are specific, measurable, achievable, relevant, and time-bound. The third stage involves designing and implementing managerial controlling practices. This includes selecting the appropriate cost accounting methods, such as Activity-Based Costing (ABC), which provides more accurate cost allocation based on activities. Budgeting and

variance analysis is also an important tool for monitoring and controlling costs. Additionally, the use of multiblock and multidimensional cost margin calculation techniques and the determination of the breakeven point (BEP) help in assessing profitability and making informed decisions. The final stage is the implementation of information systems and Nesterak (2015a) proposes here various methodologies and techniques, including business process modelling, Business Performance Management, the MetaPlan method, the Qlik View methodology, the business systems planning method, the Project Milestone Method (PMI), the waterfall model, and the incremental model. They assist the implementation team in designing and implementing information systems that are to capture and analyse relevant data, provide real-time insights, and support effective decision-making.

The presented in this section methodologies are comprehensive and universal. However, their main limitation is the high degree of generality, which can limit their usefulness in implementing controlling.

4. Implementation of selected controlling tools

The literature offers numerous methodologies for implementing a broad range of controlling instruments and techniques. Virtually all well-known cost accounting systems, both classical and problem-oriented (Jarugowa i in., 1983, 1991; Drury, 2018), have their detailed implementation procedures documented. A good example of cost accounting implementation procedures is the work on ABC, which has perhaps the largest number of publications focused on answering the question of how to implement this method. The procedure for ABC implementation stems from the ABC model and is generally enclosed in four (Miller, 1996; Drury, 2018), five (Cooper, 1990; Glad & Becker, 1996), six (Ellram, 1999) or more major steps (Gunasekaran, 1999; Roztocki i in., 2004; Roztocki, 2010; Lu i in., 2017) depending on the understanding and approach to the ABC model. It is important to emphasize that researchers continue to revisit and complement their and others implementation procedures with additional aspects (Gosselin, 2006; Velmurugan, 2010; Johnson & Brennan, 2018; Alsayegh, 2020). For example, Ellram (1999) presents a six-step procedure for implementing target costing, which is subsequently modified multiple times in later works, both by the author himself (Ellram, 2006) and other researchers (Chandrarin i in., 2019).

An interesting considerations in the ABC area is the work by Miller (1996) dedicated in practice exclusively to the methodology of ABC implementation. In their book, they present four-stage methodology divided into: (i) planning, (ii) process and activity analysis, (iii) identification of activity and object (prod-

uct) costs, and (iv) documentation of results. Planning involves development of a project plan, including a task schedule, division of responsibilities, and allocation of necessary resources for task execution; it takes around 5 to 15% of the overall implementation effort. Process and activity analysis represents the most crucial element of ABC and involves: determining activities and processes, identifying cost drivers, documenting objects (products) of activities, measuring activity workload, defining performance metrics, and distinguishing between value-added and non-value-added activities; it consumes around 50 to 55% of the overall implementation effort. Identification of activity and object (product) costs allows implementing the documented cost allocation method and the adopted assumptions. The majority of the work is done using appropriate software and consumes approximately 25 to 30% of the resources unless the company produces thousands of products or services and requires very detailed cost information. The final step represents documentation of results and focuses on recording and cataloging the results achieved at each stage of the project in the form of a report (manual); it takes around 10% of the overall implementation effort. It is important to emphasize that each step of the procedure is accompanied by extensive data collection and analysis The quality of the gathered data directly affects the quality of the ABC model and the success of the entire initiative. Regular reporting allows for learning from previous experiences and applying them to subsequent stages of the project. The authors also propose various techniques such as interviews, historical data analysis, observation, surveys, and expert opinions to be used for at appropriate stage of the implementation (Miller, 1996).

Other controlling tools including those from the field of strategic controlling are also extensively described in the literature in terms of implementation. The good examples of this are the detailed procedures for implementing BSC (Kaplan & Norton, 2005; Kopecka, 2015; Hegazy i in., 2022)it had been introduced, many researchers have been widely investigated and revealed the advantages and disadvantages of the approach that related to communication, integration and indicators measurement. Consequently, this paper determines to solve those barriers and find out the effective of practical solutions that require; (1, which is a comprehensive tool for performance measurement and management, and SWOT analysis (Chermack & Kasshanna, 2007; Leigh, 2009; Namugenyi i in., 2019; Vlados, 2019), helping in addressing strengths, weaknesses, exploit opportunities, and mitigate threats within the company.

However, it should be emphasized that nowadays the concept of controlling combines a variety of methods and techniques. Research shows that even in the area of cost information, only a comprehensive approach and the use of multiple different costing methods and cost accountings (at least two or more)

provide satisfactory benefits. This approach represents a more complete picture of the company's state, which can then be translated into appropriate managerial decisions (Clinton & Van der Merwe, 2006; Friedl i in., 2009; Smith, 2017; Ameen i in., 2018).

Extensive research on cost accounting and its methods of implementation has also been conducted by Uyar (2010), who analyzed the applications of controlling systems in 61 manufacturing companies. The results indicated that systems that combine elements from different cost accounting methods provide the greatest support for managerial decision-making. Therefore, the management of the controlling implementation process should focus on selecting appropriate techniques and tools that are suitable for the needs and broader business context of the company. A procedure for implementing controlling as a comprehensive concept supporting the selection of appropriate tools that match the company's requirements is necessary. Existing procedures for implementing individual tools are insufficient for the development of the discipline and the increasing utilization of its achievements in economic practice. This issue is clearly highlighted in the literature. Researchers in the discipline emphasize the difficulties faced by companies in selecting different controlling methodologies and tools that are suitable for their needs and business conditions (Clinton & Van der Merwe, 2006). Luft and Shields (2003) conducted extensive research on the factors shaping solutions in controlling and managerial accounting in companies, indicating that they can be influenced by elements such as organizational structure, national culture, and management attitude. After analyzing 275 works in the field of controlling and managerial accounting, the authors developed maps of the connections between scientifically explored topics and identified research gaps in both theory and empirical studies. The authors demonstrated that depending on the company's context, a single managerial accounting and controlling practice can already improve the performance and efficiency of companies. On the other hand, Weber and Nevries (2010)point out that effective controlling, aimed at formulating managerial decisions, must rely on a comprehensive set of tools, from which an experienced controller will select the appropriate elements.

5. Concepts of implementing controlling based on selected case studies

Since there are not any coherent and comprehensive methodologies for managing the controlling implementation, we decided to look for case studies hoping that they would provide a deeper understanding of the techniques, procedures, and systems used in controlling implementation.

Chenhall & Langfield-Smith (1999) investigated three companies one automotive (Holden's Engine Company – HEC), one from electronic industry sector

(Kodak Australasia) and one chemical and plastic producer (Chemicals & Plastics Division of ICI – C&P) in Australia. Each implemented innovative management accounting system consisting of ABC as part of activity-based management, benchmarking, integrated budgetary systems, key performance indicators, and BSC. The implementation processes started with the recognition of need for changes, e.g. declining profitability, critical concerns about customer satisfaction, product quality, technological changes or influence of the parent organization. The companies examined the possibility of ABC implementation, designed ABC models and within short period of time implemented them in their representative departments to identify difficulties and benefits. As the new systems proved superior to traditional costing systems operating in the companies, the models were implemented in major areas of the companies within the next few years and finally incorporated into wider financial management systems. In their study Chenhall & Langfield-Smith (1999) emphasize the importance of (i) sustaining the commitment and interest to the implementation initiative, (ii) the role of pilot studies in demonstrating the benefits of the new system, and (iii) the training for individuals involved in the controlling systems to ensure understanding and utilization of the new systems for managing the organization effectively.

López-Fresno (2010) described in her case study an airline company in Spain that was set up in1986 and implement an integrated management system (IMS) in 2001–2002. At the time of investigation, the airline company was the second largest in Spain with 52 aircrafts and 2,800 employees. The first step in IMS implementation was, like in the cases described by Chenhall & Langfield-Smith (1999) the recognition of need for changes. However, in contrast to Chenhall & Langfield-Smith (1999), the key driver for implementation was the perception that the existing many independent systems based on different standards resulted in resource overlap, inefficiency, lack of communication, and misalignment with the company's strategy. The design of the IMS involved analysing existing standards and management systems, defining the scope of integration based on identified problems, creating an interrelation matrix to identify common and specific requirements, mapping out processes and their interrelationships, and designing a flexible framework and modules to address the identified requirements and promote continuous improvement. The final stage, i.e. the implementation of IMS, engaged a cellular approach, emphasizing communication, training, and top management commitment. Due to lack of resources, it was executed in phases, starting with production processes (flight operations, passenger service, maintenance and engineering), and then extended to all company areas. The implementation of IMS in the Spanish airline successfully addressed the challenges of frag-

mented systems and brought numerous benefits, including improved strategic planning, resource utilization, communication, and employee motivation.

Kołodko & Kowalski (2020) proposed three basic stages in the implementation of controlling in Eurobent Ltd. that produces bentonite mats and geosynthetic sealing barriers. The first stage was preparation of a detailed management accounting concept with cost accounting elements, the second involved preparation of a pilot implementation based on real company data, and the third implementation of procedures related to recording economic events, cost allocation, and managerial reporting (Figure 17.2). They elaborate on the first most-important stage in their case study paper, where they further describe the implementation of a nine-step procedure, consisting of three steps dedicated to analysis of the company state and six steps for designing target solutions (Figure 17.2). The second stage encompassing pilot implementation of the target solutions is to provide managers with managerial reports specified in the concept and developed using actual company data to make the final decision regarding the future of the implementation, i.e. whether to abandon it, revise the concept or fully implement it. Importantly, the system is not fully operational at this stage, as simplifications and approximations are expected due to the limited access to source data. The third step of the planned procedure involves the actual implementation of the controlling concept prepared in the first stage related to recording economic events, cost allocation, and managerial reporting (Figure 17.2).

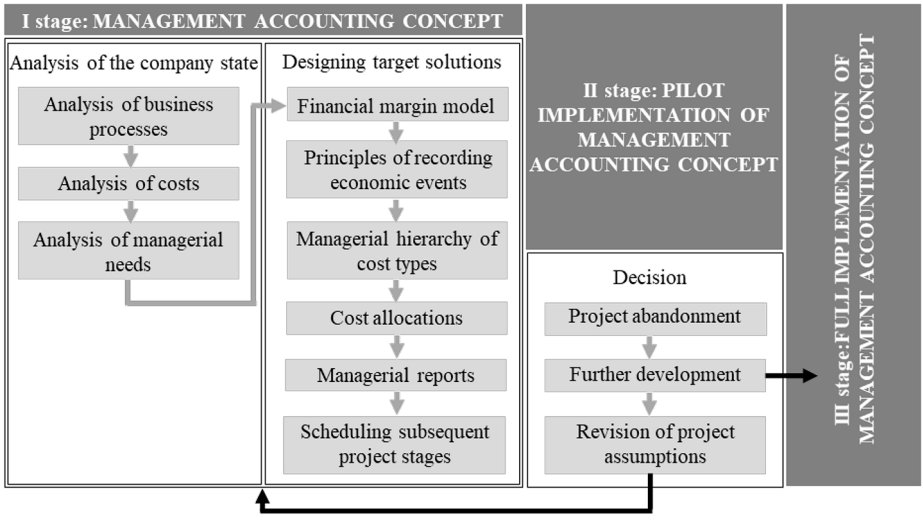

Figure 17.2. Stages in the implementation of managerial accounting according to Kołodko & Kowalski (2020)

Source: modified from Kołodko & Kowalski (2020).

An interesting case study presents Lodh & Gaffikin (Lodh & Gaffikin, 2003). They described the implementation of integrated accounting and cost management system in a steel producer in Australia. What is interesting is that they first worked very hard on developing their own system, including pilot studies; however, due to costs, time, and effort, they abandoned it and shifted to integrated business system SAP.

More case studies is included in Nesterak's book (2015a) where he verifies his controlling concept on five companies, including Wieliczka Salt Mine Ltd., pharmaceutical distributor Medicare Ltd., manufacturing company F.X. Meiller GmbH & Co KG, and producer and distributor of technical gases Linde Gaz Polska Ltd., and numerous cases are described in an extensive analysis by Zieliński (2018) which is the part of the latest global trend in research on cost accounting, the essence of which is the integration of German Grenzplankostenrechnung (GPK. For examples from tobacco industry see Carmona & Macias (2001), and non-profit organisation, including hospitals and healthcare institutions see Kihuba et al. (2016) and Waters & Hussey (2004).

Importantly, these all implementations lack detailed procedures on how to implement controlling. They represent general guidelines on how to do it. As a result, deriving clear conclusions from these studies on how to implement controlling is challenging.

6. Conclusions

The conducted research indicates that the literature on methodologies for implementing and managing controlling is relatively scarce. The few existing examples of methodologies mostly offer general guidelines and low-level of detail, making their practical application challenging. There are definitely more examples of research focusing on the implementation of specific controlling tools and methods, such as cost calculation, management reporting systems, or strategic controlling tools. While these studies formulate detailed and often elaborate procedures, they focus on techniques for implementing specific methods. They leave unanswered questions regarding the selection of appropriate methods from the extensive toolkit proposed by controlling and do not provide an order of implementing different tools or methods to build a coherent controlling system. These research studies and the resulting procedures are insufficient because managing the controlling implementation process should primarily focus on selecting appropriate controlling tools that are contextually relevant to the specific business activities. The third group of methodologies presented in the literature appears to be highly significant for practical purposes as they directly derive

from it – they are extensive case studies of controlling implementations. However, they exhibit a high level of subjectivity, influenced by individual factors such as the implemented or utilized information systems in a given company, the scale of operations, or the availability of resources for implementation processes. Consequently, drawing clear conclusions from these studies is challenging, and it is difficult to regard the recommendations or implementation experiences formulated within them as universal.

Concluding, it can be stated that the literature analysis clearly indicates that the subject of implementation methodologies in controlling requires scientific exploration. Further research should strive to develop a comprehensive and universal implementation methodology that is sufficiently detailed to maximize the success of controlling implementation. This is particularly significant in the context of the observed evolution of controlling towards managerial controlling, which brings many tangible benefits but also requires a more comprehensive and systemic approach to selecting methods and imposing new demands on the management of implementation process. It necessitates considering aspects that have not been adequately analyzed or thoroughly examined thus far.

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Chapter 18

Financial Measures of Intellectual Capital – Literature Review

Paweł Łukasik

1. Introduction

Financial measures of intellectual capital are calculated based on data from financial statements. They make it possible to compare the companies under study in terms of their level of intellectual capital. These include Market-to-Book Value (MV/BV) ratio, Q-Tobin ratio, Calculated Intangible Value (CIV), Knowledge Capital Earnings (KCE), Value-Added Intellectual Capital (VAIC) (Gross-Gołacka et al., 2019, p. 103) and Economic Value Added (EVA) (Wasilewska, 2015, pp. 180–182).

2. Research Using Measures of Intellectual Capital Based on Market Value

The MV/BV ratio belongs to a group of methods of measuring intellectual capital based on market value (Sopińska, 2008, pp. 130–131). It is also referred to as a measure of a company's saturation with intellectual capital and is an alternative to calculating the value of intellectual capital by subtracting a company's book value from its market value (Urbanek 2008, p. 106). The research conducted with the use of indicators based on market value at the Warsaw Stock Exchange has focused on: the level and dynamics of change in intellectual capital of listed companies in 2002–2006 (Sopińska, 2010, pp. 173–178), the measurement of intellectual capital of banks in 2005–2009 (Śledzik, 2011, pp. 150–151), the relationship with the VAIC indicator on the basis of a study of non-financial companies listed on the WSE, i.e., on the primary and New Connect markets, covering a total of 230 observations (Urbanek & Bohdanowicz, 2012, p. 111), the measurement of intellectual capital in 2007–2012 in WIG 20 index companies (Beyer, 2014b, p. 14), the value of intellectual capital of companies listed within

the WIG 30 index in 2009–2012 and the share of intellectual capital in market value (Beyer, 2015, pp. 120–123), the number of companies with intellectual capital in 2012, in terms of sectors – a study conducted on a group of 345 companies (Wasilewska, 2015, pp. 163, 171), the measurement of intellectual capital of selected companies listed on the WSE in 2016, (Bombiak, 2016, p. 115), the relationship with brand value and brand strength based on 56 companies listed on the WSE in the years 2008–2014 (Urbanek, 2016a, p. 345), the relationship with VAIC in joint-stock companies in the food sector in 2011–2014 (Urbanek, 2016b, p. 227), the intellectual capital of companies in the WIG Informatics index (Paździor & Twardowska, 2017, p. 46), the impact of the financial crisis on intellectual capital (the MV/BV and q-Tobin ratio were used to measure the intellectual capital) in the food sector (Garncarz & Mierzejewsk,i 2019, p. 8), and the intellectual capital of game producers (Rydzewski, 2019, p. 141).

Studies using market value-based intellectual capital indicators in other countries have looked at: the relationship between VAIC and MV/BV on the basis of 4254 observations of Taiwanese joint-stock companies from 1992 to 2002 (Chen et al., 2005, pp. 163, 167); the relationship between VAIC and MV/BV using 23 Italian public limited companies as an example (Celenza & Rossi 2014, p. 27); the relationship with visible intangibles, company size, company age, company profitability, and debt-to-equity ratio using 140 listed companies in Italy in 2013 (Forte et al., 2017, pp. 714–717), the positive impact of the share of R&D expenditure in total assets on the MV/BV ratio and the positive impact of the share of non-material assets in total assets on the MV/BV ratio, with the use of a sample of joint-stock companies from eight European countries – data for 2015 (Glova & Mrázková, 2018, p. 672); the comparison of the MV/BV ratio and q-Tobin as an estimator of growth prospects and the intangible asset ratio using a sample of data from 32,563 joint-stock companies from eight countries for the period 2000–2019 (Cardao-Pito, 2022, pp. 9,11).

3. Research with the Use of CIV as Intellectual Capital Measure

The CIV method has been used in studies on: the value of intellectual capital on the basis of approximately 60,000 Finnish companies from 11 major sectors for the period 2001–2003 (Kujansivu & Lonnqvist 2007, pp. 277–278), the use of it and the VAIC method in scientific publications from 2003–2008 (Titova, 2010, p. 732), a comparison of the intellectual capital of 62 joint-stock companies listed on the Taiwan Stock Exchange in 2008–2009 measured by the CIV method and the market value-added method (Yang & Chen, 2010, pp. 3367–3368), the value of intellectual capital of selected companies in the telecommunications industry

in 2006–2010 (Wasilewska, 2011, pp. 561), the relationship of intellectual capital determined by this method with profitability and market value on the basis of 146–150 observations for all correlations of companies listed on the Finnish Stock Exchange (Aho et al., 2011, pp. 31–32), associations with other measures of intellectual capital such as MV-BV, MV/BV, q-Tobin, intangibles, KCE, WAIC, EVA in the services other and finance other sectors and in the electrical machinery and metals sectors from 2007 to 2012 (Wasilewska, 2015, pp. 180–182).

4. Research with the Use of EVA as Intellectual Capital Measure

The EVA (Economic Value Added) method has been used in studies on: correlations with ROA and ROE ratios and financial liquidity ratios: current, quick and increased, based on data from 146 to 201 companies, for the years 1997–2009 (Kacprzyk et al., 2012, pp. 284–285), correlations with liquidity ratios based on data from 395 non-financial listed companies for the years 1998–2012 (Wolski & Bolek 2014, pp. 555–556), the impact on ROA based on a sample of 39 companies listed on the Tehran Stock Exchange from 2007 to 2010 (Salehi et al., 2014, pp. 267–268), correlations with VAIC in sectors of the Italian economy such as paper production (n = 243), chemicals production (n = 451), basic metals production (n = 406), software and consultancy (n = 782), advertising and market research (n = 525), travel agencies (n = 189) based on data from 2011 (Iazzolino et al., 2014, pp. 13, 16), the relationship between the economic rate of return and the market rate of return on the basis of data from the largest companies listed on the Warsaw Stock Exchange, classified in the WIG20 index, excluding the financial sector for 2014 (Nowicki, 2016, pp. 141–142), the impact of value added and wage costs on the example of data from two samples of companies from the Czech automotive industry, i.e., 11 manufacturers and 87 suppliers for the period from 2005 to 2012 (Pavelková et al., 2018, pp. 82, 92–93), the relationship with VAIC based on data from 91 companies for the period 2010–2014 listed on the Nigerian Stock Exchange (Anifowose et al., 2018, pp. 652–653).

5. Research with the Use of KCE as Intellectual Capital Measure

The KCE method has been used in studies on: the level of intangible assets of domestic and benchmark banks for the period 2005–2010 (Śledzik, 2012, pp. 77–78), the impact of knowledge capital gains on net worth per share based on a sample of 361 computer industry firms from Taiwan and 1018 observations of these firms from 2007–2009 (Wang, 2013, pp. 1221), relationships with other measures of intellectual capital (Wasilewska, 2015, pp. 180–182), relationships with price-value ratios, earnings per share, and return on equity based on

data from three selected joint-stock companies in the IT sector from 2012–2016 (Bagieńska, 2019, p. 8).

6. Research with the Use of VAIC as Intellectual Capital Measure

The VAIC method has been used in studies on: the relationship with asset profitability based on data from 4625 items for the years 2001–2008 (Wang, 2011, pp. 249–250), the impact on ROA, ROE based on data with a total of 1390 observations from joint-stock companies listed on the main market of the Warsaw Stock Exchange, for the years 2005–2009 (Urbanek & Bohdanowicz, 2011, pp. 649–650), the impact on ROA, ROE and revenue growth ratios based on an analysis of data from 62 companies listed on the Bucharest Stock Exchange for the years 2010–2011 (Sumedrea, 2013, p. 141), the level of intellectual capital of companies listed on the Warsaw Stock Exchange under the WIG-20 and WIG-40 indices for the years 2009–2012 (Beyer 2014a, pp. 483–485), the impact on MV/BV, ROA, sales growth, ATO, ROE based on data from 30 Indian public limited companies listed under the S&P BSE SENSEX index for the years 2009–2013 (Kamath, 2015, pp. 110–111), the impact on MV/BV, ROA, ROE, ATO ratios based on data from 59 companies that received the MAKE (Most Admired Knowledge Enterprises) award and 59 companies that did not for the period 2009–2015 (Zhicheng et al., 2016, pp. 182–187), the relationship with profits, profitability, firm productivity and market-to-book ratio based on a sample of 100 companies from Middle Eastern countries and data from 2015 (Dzenopoljac et al., 2017, pp. 891–893), the relationship with investment in intangible assets and market value added based on a sample of over 1650 European companies with data from 2004–2011 (Shakina et al., 2017, pp. 410–414).

The most recent research using this method includes studies on: the impact of ownership concentration on intellectual capital based on an analysis of data from 2090 joint-stock companies from 14 European countries for the years 2004–2015 (Sardo & Serrasqueiro, 2017a, p. 775), the impact on ROA in joint-stock companies from two different groups of countries more and less affected by the financial crisis using 25080 observations for the period 2004–2015 (Sardo & Serrasqueiro 2017b, p. 5) the impact on ROA and Q-Tobin based on an analysis of data from 2044 joint-stock companies from 14 European countries for the period 2004–2015 (Sardo& Serrasqueiro 2018, pp. 753–754), the impact on ROA and market value based on data from 127 Indonesian public limited companies for the period 2010–2017 (Soetanto & Liem 2019, pp. 246–247), the relationship with corporate social responsibility activity and corporate governance characteristics based on 1800 observations from several dozen countries, the study period

is 2010–2015 (Gangi et al., 2019, p. 11), the impact on ROA, ROE, ATO (Assets Turnover Ratio) ratios based on data from 29 textile companies from China and 37 textile companies from South Korea for 2012–2017 (Xu & Wang 2019, pp. 3–4), the impact on ROA in different phases of a company's life cycle based on data from renewable energy joint-stock companies for 2010–2016 (Xu & Liu 2019, pp. 4–5), the relationship with ROA and ROE based on data from a selected construction company registered in the Podkarpackie Province for 2010–2018 (Nakonieczny, 2019, pp. 104,108), the relationship with ROA as a dependent variable based on data from 152 private companies, for the years 2007–2018, operating in Mauritius (Bhattu-Babajee & Seetanah 2022, pp. 492, 495), the impact of shareholders making strategic decisions on intellectual capital based on Taiwanese semiconductor joint-stock companies using 819 observations from 2009–2017 (Hsieh, Ting, Asif, Le 2020, p. 70), the impact on ROA, ROE, MV/BV ratio based on the analysis of data from 4 socially responsible companies from the WIG-ESG index for 2013–2019 (Michalczuk et al., 2021, pp. 20–21), the impact on ROA and MV/BV ratio based on data from 766 joint-stock companies in the electronics sector from Taiwan for the period of 2010–2018 (Ting et al., 2021), the impact on ROA and ROE based on a sample of 108 financial companies and 41 pharmaceutical companies from Vietnam including data from 2016 (Zhang et al., 2021, pp. 4), the impact on a bank's ROA based on data from 53 East African banks from 2010–1018 (Githaiga, 2022, p. 512), the positive impact of the relationship between CSR and the return on assets based on a sample of 4722 observations of 787 firms from 11 Asian countries, from 2012–2017 (Mutuc & Cabrilo, 2022, p. 1236), the impact of intellectual capital on the relationship between CSR and ROA based on the analysis of data of 2541 US-listed joint-stock companies from 2009 to 2018 (Shahzad et al., 2022, p. 298).

7. Conclusion

A systematic review of 777 scholarly publications from 1972 to 2016 confirms that VAIC has been the most widely used method for measuring intellectual capital in academic research (Pedro et al., 2018 pp. 2512–2514). In summary, financial measures of intellectual capital are useful as measures of the level of intellectual capital in a given sector of listed companies and as variables in various types of studies to show the impact of intellectual capital on corporate profitability and market value. However, there is a shortage of research combining financial data with non-financial information. Research conducted by Polish authors was done mostly on the Warsaw Stock Exchange. Most of the authors used

data from stock markets in their countries. It is worth noting that the number of observations used in studies varies and there is not much research with a high number of observations from different countries. In conclusion, future research can concentrate on relationships between financial and non-financial measures of intellectual capital.

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Chapter 19

Cost Deployment in the Optimization of Production Processes in the Enterprise

Janusz Nesterak, Angelika Wodecka-Hyjek, Ewa Bąchor

1. Introduction

The constant pursuit of commercial organizations to increase the efficiency of operations in a rapidly changing business environment also requires the use of solutions, methods and tools not commonly used so far. An extremely important aspect in the use of controlling in process optimization is the skillful selection of tools, their implementation, as well as the ability to use the possibilities offered by IT systems. Management controlling has a much wider scope of impact than reporting controlling, as it affects both the course of basic and auxiliary processes taking place in the enterprise (Nesterak, 2015).

The multiplicity of management controlling tools that an organization can use to analyze costs is very wide. One of them is the Cost Deployment method, which is used in manufacturing companies, mainly in the analysis of production costs. The aim of the study is to show the essence and importance of Cost Deployment in the optimization of production processes carried out in the company. This is illustrated using the example of a manufacturing company where this method was used.

2. Management Controlling in the Enterprise Management System

Controlling means: thinking from the perspective of the goal and directing all decisions to achieve it (Kotapski, 2022). Activities related to planning and calculation as well as control and management are essential for controlling. This applies to both a single management decision and the management of the enterprise as a whole (Gänßlen et. al., 2012). They are inextricably linked with financial controlling, cost accounting and management accounting. Different definitions of controlling are presented in the literature. Selected definitions are presented in Table 19.1, from which it comes that controlling is primarily to

Table 19.1. Summary of definitions of controlling by American and German authors

Author	Definition
USA	
R. Anthony	Controlling is a tool supporting the management process, which leads the organization towards the set goals, serves to achieve a competitive advantage, ensures effective implementation of the strategy and achievement of success.
Ch. Horngren	Controlling is a method of collecting and using information to support and coordinate planning processes and their control throughout the enterprise. The aim of controlling is to constantly improve all decisions made within the organization.
H. Kerzner	Controlling is a management process involving the stages of measuring economic values by means of which the degree of achievement of objectives is assessed, identifying the causes of deviations and correcting the wrong or favorable trend.
R. J. Mockler	Controlling is the process of systematically comparing plans with their actual implementation, which allows for quick corrective actions. They are to make full use of all company resources for efficient and effective achievement of the company's goal.
Germany	
R. Bramsemann	Controlling is a way of thinking of employees that ensures full compliance of the goals pursued at all levels of the company. This is achieved by a strong coordination of tools, know-how techniques, appropriate planning, control and information systems.
D. Hahn	Controlling supports decision-making and activities in the enterprise through proper result orientation, planning and control.
A. Heigl	Controlling means properly assigned tasks of the enterprise management process. He rejects identifying controlling with control, pointing out that it is rather organization, motivation, coordination, management, forecasting, planning and communication.
P. Horvath	Controlling is a management subsystem that coordinates planning, control and information provision and thus supports the adaptation and coordination of the entire system. These activities are aimed at controlling the entire enterprise due to the set goals, i.e. the achievement of specific ones earlier effects.
H.Ch. Pfohl	Controlling is interpreted as: company philosophy, way of thinking, new management accounting orientation, controller's task and a new management style.
C. Richter	Controlling as tasks focused on achieving the company's goals, supported by planning, management and control. They are implemented at the appropriate decision-making levels in the management hierarchy.
H. Schierenbeck	Controlling is usually understood as a management support system with which ongoing management processes can be improved with regard to defining and achieving operational goals.

table 19.1 cont'd

Author	Definition
K. Serfling	Supply system to support enterprise management through the planning, control, analysis and development of various alternative activities.
J. Weber	The purpose of controlling is to support the company's management, starting from the managers of the responsibility centers to the management board, in fulfilling their tasks. It shows the three most important aspects of controlling: providing access to reliable information, what they allow for fast-acting, extensive databases (1), a form of management that enables effective achievement of the company's goals (2) and coordination of all areas of company management, which increases the effectiveness of decisions made and facilitates the implementation of the strategy (3).
H. Vollmuth	Controlling has a cross-functional meaning. As a management instrument, it supports the entire managerial staff of the company in making decisions. The essence of management is planning in which goals are set jointly by operational management and board members. The effectiveness of such approach is achieved by constantly comparing the set goals with their achievement. The last important element of controlling is the information system, which allows for quick detection of disturbances.

Source: (Nesterak 2013, p. 42).

perform the function of economic consulting and initiation of activities conducive to the development and selection of ways to optimize the processes taking place in enterprises and organizations.

Taking into account the contemporary conditions of managing organizations as well as the complexity and unpredictability of the environment, business entities are obliged to look for solutions whose task is to increase the optimality and efficiency of operations, reduce operating costs or increase productivity. The functional approach in the way of managing enterprises, which has been used for many years, has shown many shortcomings, hence the emphasis on improving processes in modern organizations is justified (Nesterak et. al., 2020). The effectiveness of an organization is the sum of work efficiency, technical/technology processes efficiency as well as efficiency of other resources (Figure 19.1). Organizational effectiveness should be perceived in terms of processes and its goal is to improve the implementation of processes (Nesterak et. al., 2020).

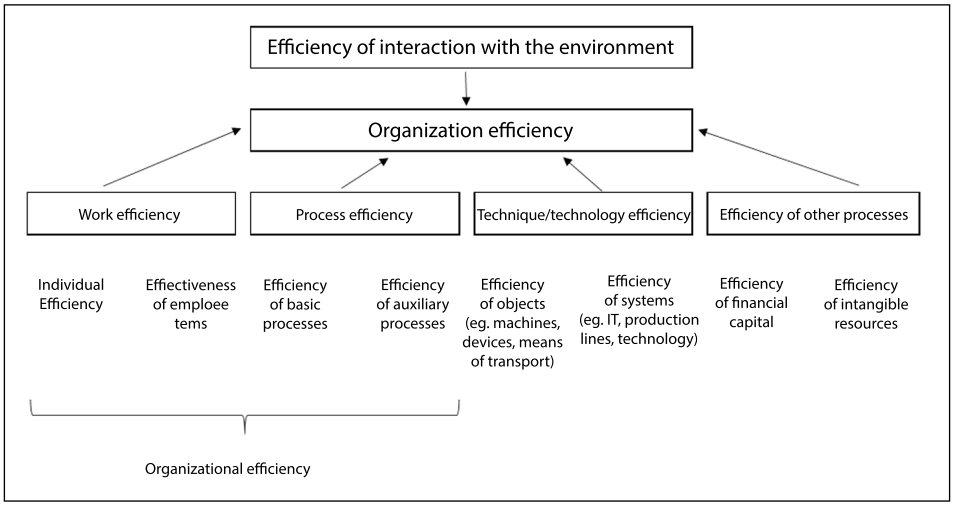

Figure 19.1. Subcategories constituting the effectiveness of the organization – object-oriented approach
Source: (Nesterak, 2020, s. 13. za Głodziński 2017 s. 49).

Management of the processes taking place in the enterprise takes place both at the strategic and operational level. Controlling is a concept that includes many different contents and should be created in such a way as to facilitate decision-making (Nesterak, 2013, p. 52). Since controlling is designed to build a management decision support system, it is an essential element of support in the management process. The procedure of management by controlling in the traditional approach is presented in Figure 19.2.

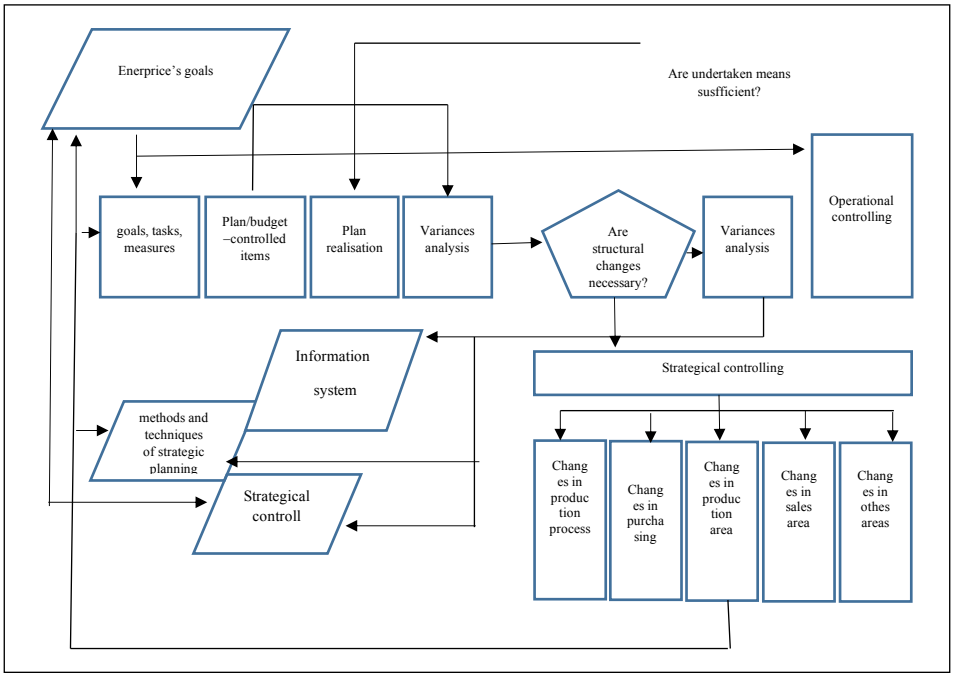

Figure 19.2. The procedure of management by controlling in the traditional sense
Source: (Dźwigoł, 2003, s. 31–35).

Defining controlling as a way of managing an organization aimed at improving the effects of its operation allows extending the definition of controlling with the adjective "management" (Nesterak, 2015, p. 46). This way of viewing controlling is indicated by the recognition of controlling due to the scope of assigned tasks and organizational form, which is presented in Figure 19.3.

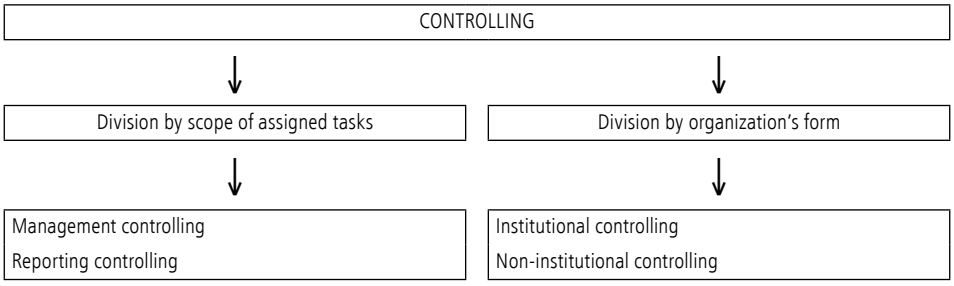

Figure 19.3. Types of controlling
Source: (own work based on Nesterak, 2015, s. 19).

One of the goals of management controlling is to build a multidimensional system to support the decision-making process for the management staff. This is possible if the controlling system is properly designed and implemented, which in turn enables effective management of corporate responsibility centers. It allows for the optimization of business processes (Nesterak, 2015, pp. 16–18). The acquired analytical knowledge is used to optimize the course of technological processes taking place in each functional area of the organization. In contrast to report controlling, management controlling has a wider range of impact, influencing both the course of basic and auxiliary processes, and the controller, receiving a very large range of competences, takes over managerial functions (Nesterak, 2015, p. 47). In practice, many methods and techniques are used to support activities undertaken in the field of management controlling. The basic methods and techniques supporting management controlling are presented in Table 19.2.

Table 19.2. Basic methods and techniques supporting management controlling

Management controlling tools in perspective:	
short term	long term
■ "4P", "4C", "7P" analysis ■ value chain analysis ■ discount analysis ■ analysis of sales areas ■ trend development analysis ■ risk analysis ■ market and competition analysis ■ bottleneck analysis ■ order size analysis ■ budgeting and variance cause analysis ■ just-in-time ■ Ishikawa diagram – cause and effect diagram kanban ■ cost analysis methods: • Activity Based Costing (ABC) • Break Even Point (BEP) • Cost Deployment (CD) • Direct Costing (DC) • multi-block and multi-stage margin account to cover costs • optimization of production volume	■ SWOT analysis ■ experience curve analysis ■ portfolio analyses: BCG, Hofer, McKinsey benchmarking ■ Balanced Scorecard (BSC) ■ hoshin kanri ■ Business Process Management ■ Business Processing Reengineering (BRP) ■ lean management ■ Ansoff matrix ■ strategic gap ■ make or buy – produce or buy ■ scenario method ■ SMART model ■ multiple possibilities method ■ investment profitability account ■ Performance Prism ■ Skandia Navigator ■ tableau de bord ■ early warning system (EWS)

Source: (Nesterak 2015, p. 54).

In making key short- and long-term decisions, information regarding the costs of activities and activities of individual operational and auxiliary processes incurred by the organization is necessary. Analytical knowledge is used primarily to optimize the course of technological processes taking place in each functional area of the organization. Therefore, management controlling has

a much wider range of impact, as it affects both the course of basic and auxiliary processes taking place in the enterprise (Nesterak, 2015).

3. Cost Deployment in the Optimization of the Production Process

For process-managed organizations, the needs and requirements of customers are of superior importance. The increase in costs and the increasing competition on global markets make companies look for or develop new concepts and styles of management. In recent years, the improvement of the cost position enables effective competition and safe operation in the long term has become of fundamental importance in management. In the case of low awareness of the costs incurred, effective analysis is very difficult, as is making optimization decisions. To improve competitiveness, it is therefore necessary to be aware of the essence of the costs incurred, the possibility of shaping them, knowledge of the factors determining their value and knowledge of the relationship with the risk incurred (Nowak, 2017).

In order to achieve high efficiency of the organization's activities, it is necessary to be able to monitor the costs incurred in the ongoing processes as well as the ability to make necessary changes in the ongoing processes, in particular if they increase the effectiveness of the organization that the organization strives for. Cost accounting and cost management are areas that overlap and complement each other. In order to achieve effective cost management, it is necessary to understand better the mechanism of shaping them, which includes various activities to be performed. Knowledge about the nature of costs is necessary for their accurate assessment, explaining the cause and identifying the right ways to eliminate irregularities related to excessive costs (Nowak, 2015).

The method aimed at increasing the efficiency of the processes taking place in the organization is the method of cost analysis – Cost Deployment. Cost Deployment's purpose is to indicate and identify losses arising in the production process. Cost Deployment is a method used in world production systems – World Class Manufacturing WCM (Yamashina & Kubo, 2000; Dudek, 2014; Piasecka-Głuszak, 2017). The term was first used by Yamashina and Kubo (2002). The term WCM, derived from the concept of Lean (Womack &, Jones, 1996), was introduced by Hayes and Wheelwright (1984), who presented it as a set of principles, practices and techniques that will lead the company to excellent results (Flynn, Schroeder and Flynn, 1999), by increasing the efficiency of the ongoing processes.

Enterprises, in particular those with the WCM status, in order to achieve a cost advantage, strive to eliminate all unnecessary operating costs that do not bring added value, i.e. losses. Cost Deployment is a method combining traditional

cost accounting, Lean Accounting and management controlling. It is a response to traditional cost accounting systems that support the operation of many companies that have not met the needs of organizations that have to deal with a dynamic and constantly changing environment, characterized by increasingly shorter product life cycles and hyper competition (Horngren et al., 2002).

The Cost Deployment method, being one of the pillars of the introduction of WCM in the enterprise, is generally used in manufacturing enterprises and the analysis covers the production process. The cost analysis process based on Cost Deployment is focused on the identification of waste during production processes, the place of its occurrence, the possibility of elimination and expected results. Cost Deployment consists of specific, consecutive stages. Each subsequent step involves analyses that are increasingly complex and detailed. The results of the analyses carried out at each stage are the basis for creating a matrix that presents the result of the implementation process, while indicating the actions that should be taken as a result of the analysis. The analysis begins with the definition of the so-called transformation costs. The cost of transformation is understood as the cost associated with activities that create/add value in production and logistics cycles. It is any activity performed in the production process that includes the processing of raw materials and contributes to the production of the finished product. In 2016–2018, a project was carried out to introduce the principles and tools of lean management in a company producing household appliances. As part of this project, the costs incurred in the entire production process were analyzed using the Cost Deployment method. The aim of the project was to optimize the production process by eliminating generated losses and waste. The cost system introduced under Cost Deployment does not divide production costs in the traditional way into direct and indirect costs. The cost of transformation includes: direct labor costs; indirect labor costs; general costs; scrap costs. On the other hand, the cost of transformation does not include the cost of raw materials, because the WCM pillars do not have appropriate tools to take improvement actions related to purchasing, sales and administration activities. Cost categories constituting the cost of transformation with exemplary values are presented in Figure 19.4.

The use of the Cost Deployment method clearly indicates the possibility of an in-depth analysis of the production process through the prism of the costs incurred. It can be a very useful method for tracking and eliminating losses in the production process and thus reducing costs. The Cost Deployment method evolves along with the development and changes taking place in the production process, and precise information on the distribution of costs almost immediately effectively reduces the production costs incurred by the organization (Giovando

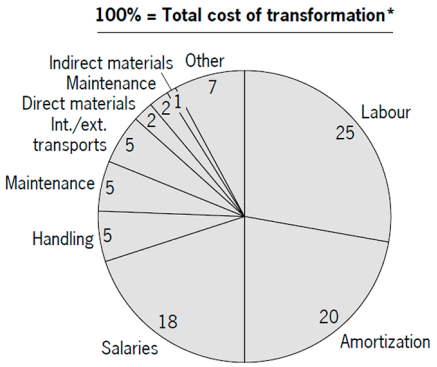

Figure 19.4. Product Transformation Cost Categories – From Raw Materials to Finished Goods
Source: On the example of a company from the household appliances sector, 2016, (project materials).

et al., 2020). Cost Deployment, by introducing and modernizing enterprise management and control systems, introduces a strong connection between the individualization of areas for improvement and the results of improving efficiency obtained through the use of technical WCM pillars, measured by appropriate KPIs (Key Performance Indicators) (Massone, 2007). Cost Deployment allows to systematically define corrective programs that have an impact on reducing losses, and everything that can be qualified as waste or not adding value activity. This is achieved by (Yamashina, 1999; Byrne & Womack, 2012):

- analysis of the relationships between cost factors and processes that generate waste and losses in different ways,
- verification of the relationship between the need to reduce waste and generated losses and the reduction of related costs,
- verification of the know-how in the field of reducing waste and losses and the answer to the question: is it already available or should it be acquired,
- prioritizing projects aimed at reducing generated waste and losses in accordance with the priorities resulting from the cost/benefit analysis,
- continuous monitoring of the progress and results of optimization project.

Cost Deployment allows direct quantification of incurred costs and losses, but also their quantification in physical measures: hours, kW/h, quantities of material, etc. Such an approach is extremely important for production and technical departments. At the same time, the use of the Cost Deployment method in a manufacturing company, leads not only to the reduction of production costs, but also allows the definition of the best technical method to remove the cause of generating unnecessary costs, as well as a detailed assessment of the costs of activities related to the removal and improvement of the efficiency

of the production process. Supporting tools in the implementation of Cost Deployment are not only IT tools based on data analysis, but also techniques used and supporting the process of WCM implementation in the enterprise (DeBusk, 2012). The most commonly used include: just-in-time, comprehensive quality management (TQM), autonomous defect detection system (jidoka), quick machine changeover method (SMED), quality circle method, technique of placing machines into object or technological sockets (in other words error prevention system (poka yoke), housekeeping system (5S), material flow control through a pull system (kanban), machine maintenance system (TPM), fault signaling technique (andon), production leveling technique, parallel design method, process mapping technique, value stream mapping technique (Nesterak et al., 2022). In addition, the FMEA method, the kaizen philosophy, Lean Six Sigma, the Hoshin Kanri method, the 5Why method and standardization are used (Lisiński & Ostrowski, 2006). A commonly used tool in lean manufacturing is also VSM (Value Steram Mapping). It is a comprehensive analysis and visualization tool for illustrating the main processes and their operations, along with execution times, buffers and information flows (Rother & Shook 2003).

4. Results of Cost Deployment Implementation in Surveyed Enterprise

The effect of applying the VSM (Value Stream Mapping) production process analysis method with the use of cost analysis carried out by the Cost Deployment method is presented below. As a result, corrective actions and streamlining of the production process were applied. Figure 19.5 shows the situation before applying these methods, and Figure 19.6 shows the situation achieved after introducing solutions based on both methods.

As a result of the optimization processes carried out, during the optimization project in a company from the household appliances sector, one of the results achieved within a year of launching new solutions were:

- the residence time of the product during processing has been reduced by 24%,
- optimization in the area of internal logistics led to a reduction of semi-finished materials by 17%.
- in the area of optimization of deliveries, it resulted in a reduction of material inventories by 9%.

The process of implementing changes continued until 2019 as an implementation project. After this time, the company continues to apply the principles, methods and tools that are applicable, but already in the normal, operational production cycle and not as a pilot project.

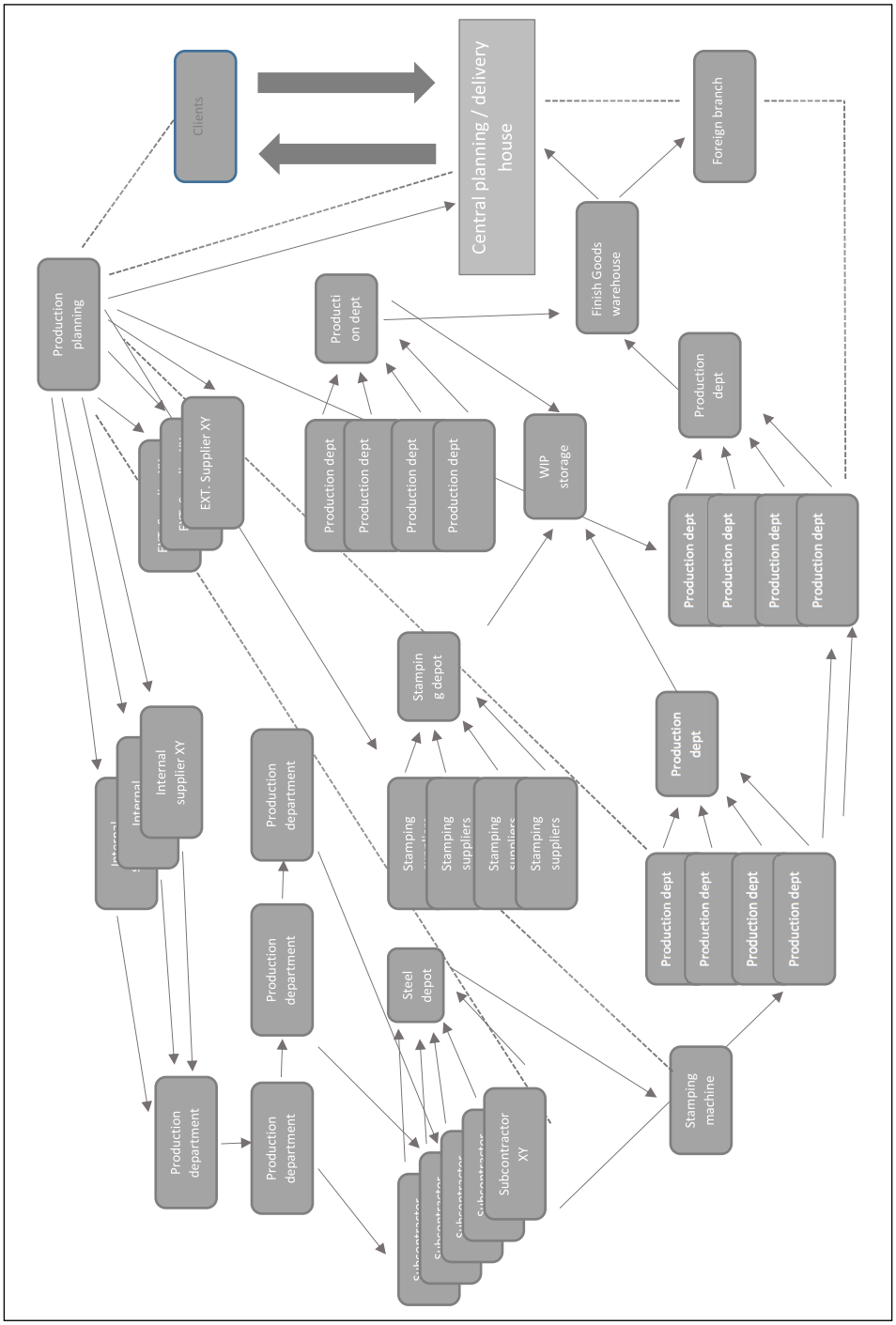

Figure 19.5. VSM diagram in the examined production plant – situation before the use of Cost Deployment
Source: Materials from the analysis carried out in a production company, 2017, (project materials).

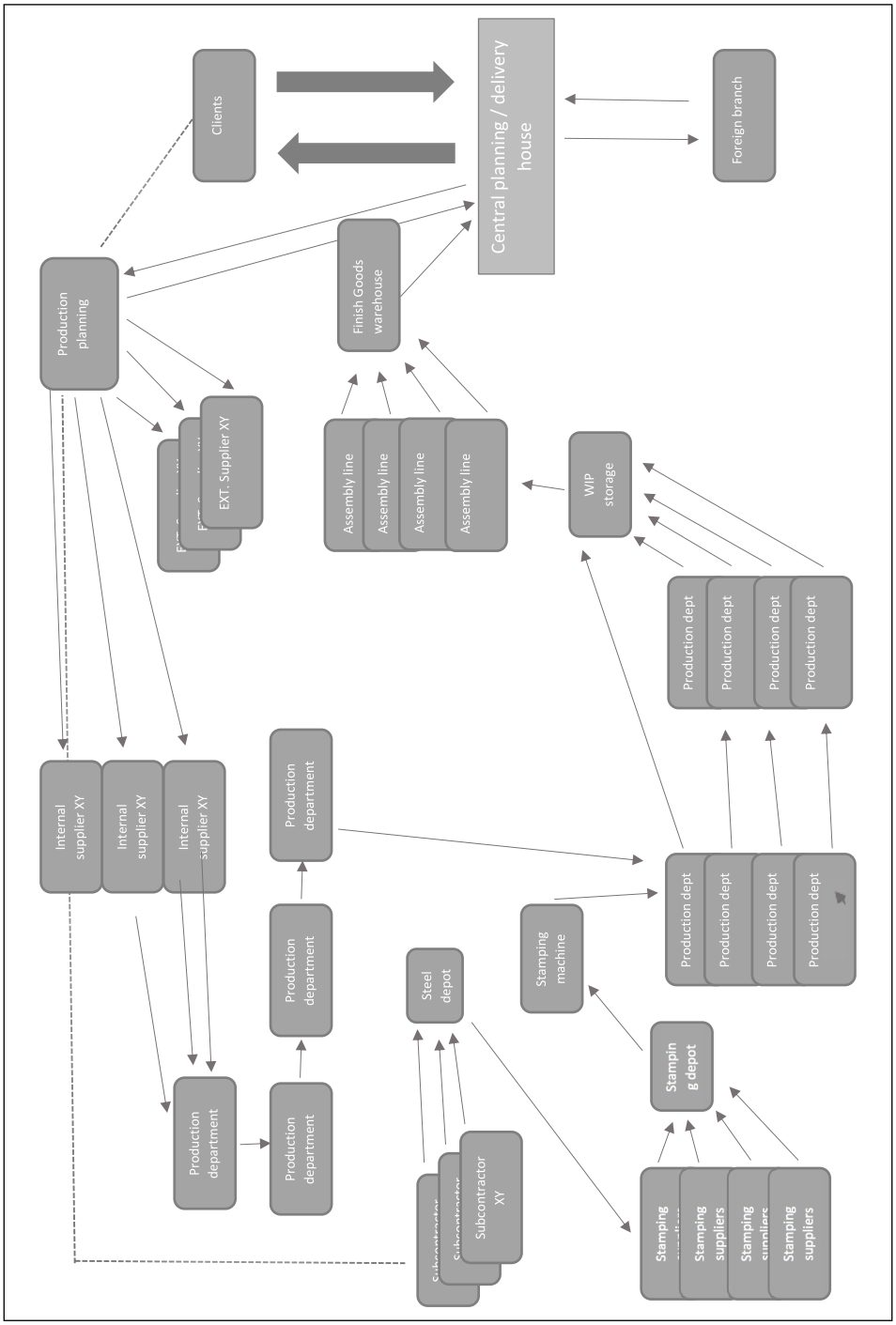

Figure 19.6. VSM diagram in the examined production plant – situation after using Cost Deployment
Source: Materials from the analysis carried out in a production company, 2017.

5. Conclusion

Management controlling is interdisciplinary and covers the full spectrum of controlling the company's results in the short and long term. Controlling is a concept that contains a lot of different content and should be created in such a way as to facilitate decision-making (Nesterak, 2013).

The Cost Deployment method can successfully be a kind of path that can be followed by an enterprise in search of the ideal cost of production. The use of the Cost Deployment method as a cost analysis tool can support the management in making effective business decisions and, consequently, be helpful in creating a competitive advantage by improving production processes, as well as increasing the ability to react quickly and flexibly to changes. The basic task of modern methods of measurement and evaluation, which are used by management controlling, is to move away from controlling traditionally perceived and to move to the way of communicating the current situation and the degree of implementation of the strategic goals set in the organization. There is a need to search for modern enterprise management tools to improve the efficiency and effectiveness of management.

The legitimacy of using the Cost Deployment method as an effective management controlling tool is confirmed by the effects that have been obtained in terms of reducing the production costs of the surveyed company. The use of Cost Deployment also facilitates the selection of (lean) improvement actions and projects to be launched to remove or correct the causes of such losses, enabling an economic assessment of costs and benefits. In addition, thanks to a structured step-by-step process, it ensures the optimization of production processes in the organization (Byrne & Womack, 2012).

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Chapter 20

Pricing Policy of Non-Public Higher Education Institutions in Poland

Marcin Marzec

1. Introduction

With the development of the market economy, the situation in the market of educational services provided by Polish universities has changed. The market is having difficulties at the moment in acquiring customers for the service. In this situation, apart from shaping the educational offer, establishing relations with entities from the environment, and conducting promotional activities, it is also appropriate to establish an accurate pricing policy for the provided educational services. The pricing policy pursued by universities affects the market, determining the behavior of customers of educational services and competitors. It determines the size of enrollment and is considered a key instrument of competition for students. The issue of the study is particularly topical due to the scarce funding of non-public higher education institutions in Poland from the state budget and budgets of local governments, in contrast to public higher education institutions. These schools primarily count on payments from recipients of educational services. These payments are the main source of financing for non-public universities, which determine their existence in the market of educational services. Therefore, the price policy shaped by non-public schools in Poland is of particular importance and is a challenge for them. Prices should be set at a level acceptable to the recipients of educational services, and thus ensure the survival of universities.

The purpose of this article is to present the pricing policy of educational services provided by non-public higher education institutions in Poland in connection with the progressing demographic decline. This policy consists of determinants determining the pricing strategies adopted for implementation. To diagnose the pricing strategies used and determine the impact of prices on the educational activity of non-public universities in Poland, direct research was

conducted with the authorities of these schools. Direct research was carried out in three periods (2010, 2015 and 2021/2022) and aimed to determine changes in the factors determining the competitive advantage of a university.

2. Literature Review

The literature used in the article concerns the issue of pricing policy implemented by non-public higher education institutions in Poland. For a comprehensive explanation, both continuous and compact items in Polish and English were used. To characterize the price, its role and function in the economy, literature items of many well-known and respected authors were used (Altkorn, 2006; Begg et al., 2003; Czubała 2012; Samuelson & Nordhaus 2012). In turn, the best-known publications on the issue of price and pricing strategies used by universities include works by Kolasiński & Lisiecki (2004), Hall (2007), and Kulig & Nowaczyk (2004). In addition, the literature studies were supplemented with the author's own research on the pricing policy implemented by private universities in Poland during the demographic decline.

3. Price and the Activities of the Authorities of Non-Public Schools in the Field of Pricing Policy as the Subject of Research

In the literature on the subject, the concept of the price should be understood as a specific value expressed in money, which is the equivalent of a given good. The buyer who purchases a good or service undertakes to pay the seller the equivalent of the price. For the buyer, therefore, the price is the cost he has to pay at the time of purchase; some value he must give up to acquire a good or service. For the seller, the price is a source of revenue. The price is also the value at which the participants of the market game (seller and buyer) are ready and willing to make purchase and sale transactions. Therefore, prices should cover all socially necessary production costs and be set at a level that ensures full distribution of manufactured consumer goods, preventing shortages or surpluses (Altkorn, 2006; Begg et al., 2003). In addition, the price is a value co-created by the customer of a given organization. Without an interested customer, there is no value. This means seeing customers as partners in creating value – a collaboration that increases buyer engagement and leverages their insights into the value they seek and how organizations can deliver it. The result can be new revenues, increased customer satisfaction and loyalty, positive feedback, and savings (Bertini & Gourville, 2012). Finally, it should be remembered that when setting

prices for their products/services, organizations must take into account the needs and expectations of the final recipient.

In the market economy, price plays a significant role, namely it (Altkorn, 2006; Begg et al., 2003; Czubała, 2012; Samuelson & Nordhaus, 2012):

- coordinates decision-making by producers and consumers in the market. Higher prices reduce purchases and encourage production. Lower prices stimulate consumption and tend to reduce production. Prices are therefore the driving force of the market mechanism,
- characterizes every transaction, regardless of its type (in the case of some public services that are not paid for directly, there is a price. It is also included in taxes levied on citizens. Such products or services are referred to as non-goods. The price during transaction may take various forms, i.e.: the price in the strict sense, when the buyer purchases the good or service, and the price in the broad sense, which includes the price in the strict sense, as well as rent, tariff, membership fee, salary, tax, interest rate, and fee),
- is a significant factor in shaping the competitive advantage of the organization. Setting prices at a level acceptable to the target market can quickly increase the company's profit. Usually, increasing the price is easier and less costly for the company than increasing production. In addition, proper pricing reduces the gap between costs and demand and leads to a better market position. However, it should be remembered that usually, a high price entails a smaller number of buyers willing to buy a good or service.

Price also performs the following functions in the economy (Altkorn, 2006; Czubała, 2012):

- information, because it reaches all economic entities that are market participants and allows them to determine the amount of their income, and stimulates them to make a specific decision. The price informs the buyer how much his monetary income decreases when he buys a good/service, while the seller informs the seller about the increase in his income if he sells it,
- redistributive (distributive) because it is an instrument for the distribution of goods and services, as well as the transfer of income between buyers and to the state budget. It leads to a redistribution of income through prices, through various burdens in the form of taxes, duties, or subsidies,
- simulation (stimulus) because it is an instrument for influencing suppliers and recipients. A high level of prices at constant costs causes an increase in the volume of supply (profitability of production), while a low level of prices reduces the volume of supply (limitation of production). On the other hand, a price increase induces buyers to reduce the volume of demand (lower

consumption), and a low price causes its increase. In addition, the state can influence the increase in the consumption of certain goods through prices, and regulate the real income of buyers.

Organizations operating in the market economy set prices for their products and services. These prices may have different names and levels. Universities present educational offers for various levels of education and types of studies (bachelor, master, doctoral, post-graduate), for which they set specific prices. In addition, they can offer not only educational services but also research and expert services, which is why the pricing policy is notably varied.

Universities, in particular non-public universities in Poland, have a difficult task in terms of conducting activities and making decisions regarding the determination of an accurate pricing policy. This policy must primarily be based on:

- the structure and level of university costs,
- prices set by other public and private higher education institutions,
- quality of services provided,
- competitive position of the university,
- market activities, especially those that are the basis of competition,
- available university resources,
- the results of estimating the demand for services (using the demand curve, you can show what educational offers will be purchased at a given time at specific prices),
- political and economic situation of the country,
- grades obtained by university students.

A properly shaped pricing policy can ensure the university's survival and further development. Thanks to it, universities implement a certain set of goals, leading them to achieve a cost advantage in the educational services market, thus satisfying their needs and students' needs. Due to the unequal financing of non-public universities from the state budget, these schools must put more effort into shaping the pricing policy. Non-public higher education institutions, therefore, try to achieve a partial reimbursement of costs, bearing in mind that they must rely primarily on payments from recipients of educational services.

4. The Price of Educational Services

The concept of the price of educational services provided by universities can be defined in two terms: narrow and broad. In a narrow sense, the price of educational services means tuition fees paid by students for their studies. In the second, broader sense, the price should be perceived as all fees for the university, as well as money transferred to other entities (e.g. hotels, canteens, dormitories, etc.),

conditioning the possibility of studying, as well as non-financial costs (intellectual effort, time devoted to studies, etc.) (Kolasiński & Lisiecki, 2004).

On the market of educational services provided by universities, the following types of prices can be defined (Table 20.1).

Table 20.1. Types of prices for educational services at universities and their characteristics

Price type	Characteristic
Basic formal price	This price is defined in a narrow sense, it includes elements such as tuition fees and entry fees.
Formal additional price	This price includes elements such as diploma fees, internships, documents and their duplicates, and exam retakes. Within this price category, a common element can be distinguished – applicable to all students, e.g. a diploma fee, and a selective element – applicable to a selected group of students, e.g. fees for retake exams.
Informal price	This price applies to fees paid to other entities and includes elements such as dormitory/accommodation, meals, books, and commuting. These are the so-called indirect fees that a student who undertakes studies outside the place of residence pays when wanting to study at higher education.

Source: Kolasiński & Lisiecki (2004, p. 236).

The price of educational services is an instrument of influencing the customers of universities and is one of the criteria for choosing a university (Raposo & Alves, 2007; Drapińska, 2011). The results of the research conducted by A. Kulig and G. Nowaczyk indicate that economic considerations related to studying are a significant determinant of the choice of a university by high school graduates (Kulig & Nowaczyk, 2004). When deciding on the choice of a university, the student (client) tries to determine the costs that he will have to incur during his studies. These costs are not only fees directly related to the education process, such as registration fees, tuition fees, and corrections for exams (in the case of paid studies in non-public schools and part-time studies in public schools) but also other costs incurred in connection with commuting to the university, accommodation in dormitories, purchase of meals, etc. The price of educational services provided by universities is often perceived not as a measure of the value of education, but as a factor determining access to higher education, thanks to which the client receives benefits in the form of higher education and an appropriate title.

Price has become a competitive tool used by every university. It is used as an instrument of competition between non-public higher education institutions. It is also used in part-time (extramural) studies between private schools and public universities (Pluta-Olearnik, 2006).

The price is a key factor influencing the revenues of non-public universities, which mainly depend on tuition fees paid by the student. Fees paid by students constitute a significant portion of the income of higher education institutions,

especially private higher education institutions. The amount of tuition fees is related to the goals set by the university, such as:

- reimbursement of operating costs on the market,
- maximizing the number of students,
- maximizing current income,
- maximizing the current surplus of revenues over costs,
- creating and consolidating the image of an elite university related to its prestige and quality of educational services,
- survival on the market (Kolasiński & Lisiecki, 2004).

The amount of tuition fees is affected by the cost of education, competition prices, demand for a specific type of educational services, price flexibility, and preferences of organizations supporting universities. The high level of tuition fees harms the amount of co-financing provided by donors, and may also be the reason for not granting it at all. Often, donors financially support universities that charge high tuition fees for their students, where the schools have a good reputation. In non-public higher education institutions, tuition fees depend on the costs and prices of competitors. A higher level of tuition fees than that set by the competition may result in a decrease in the demand for studies. On the other hand, the lower level of tuition fees of the competition may result in a not-always-fair negative assessment of the quality of services provided by universities (Hall, 2007).

There are many universities on the market with a similar profile of education. So students have a choice. In a situation where the field of study chosen by them does not meet their expectations, they can change the university. Acceptance of the offer price during studies takes place when the school has a strong brand and a well-formed image. The student is then aware that he is part of the elite community created by a given university. The acceptance of the prices of educational services also takes place when the costs of education are leveled by scientific and social scholarships received by students, and when the financing of education concerns wealthy families (Kolasiński & Lisiecki, 2004).

Changes in supply and demand in the educational services market result in the selection of a specific pricing strategy. In general, the following price strategies of universities can be distinguished: price strategies according to the amount of payment, strategies according to the price structure, including price promotion strategies, price strategies according to payment systems, price differentiation strategies, and market game strategies (Kolasiński & Lisiecki, 2004).

Price-based pricing strategies are divided into high, neutral, and low pricing strategies (Waniowski, 2014).

The high price strategy is implemented by universities in the case of low price sensitivity of customers. Only universities with a strong brand, positive image, and offering services of the highest quality can afford to choose this strategy. But as a result of intensifying competition and demographic decline in the market of educational services, the use of a high-price strategy seems very risky.

The neutral pricing strategy allows universities to set prices close to those set by competitors. Such activities make it possible to use other market instruments in the competitive struggle, i.e. educational service, promotion, availability of educational services, staff.

The low-price strategy is the one most often used by universities. The reason for this is the high price sensitivity of customers and the high share of fixed costs[1] included in the price of the educational service. However, the use of this strategy raises some concerns about increasing price competition and thus the loss of financial liquidity of the university.

Strategies devised around price structure include the so-called "all-inclusive" price and a low "list price" with a system of additional fees.

The "all-inclusive" price means that the tuition fee includes all the costs that the student should incur while studying. This position is less and less frequently used by universities because then potential customers perceive the price for educational services as quite high.

The "list price" is a low tuition fee, which does not include additional fees such as exam fees, make-up fees, internship fees, diploma fees, and holiday fees. This approach is used quite often in non-public higher education institutions.

Price promotion strategies are commonly used in the pricing policy of universities. They concern reductions and discounts in the tuition fee and registration fee (for those who enroll for studies within a strictly defined period). This approach is intended to encourage quick decision-making about taking up studies at a particular university and also has a certain impact on the availability of services provided by schools. It affects the psyche of potential customers, showing them the benefits of the possibility of taking advantage of the educational offer of the university.

Pricing strategies according to payment systems are designed to increase the availability of educational services and attract as many customers as possible. Currently, on the market of educational services, some universities use full

[1] The fixed costs of a higher education institution include mainly: rental of didactic space or their depreciation and all other related burdens within the scope of the university's normal processing capacity, maintenance of classroom equipment, basic salaries with overheads of full-time teaching staff (teaching tenure).

tuition fees: for a year in advance, in two-semester installments, in ten monthly installments, or twelve monthly installments. This system allows future students to choose a university that has adopted a fee system that suits them.

Price differentiation strategies include price differentiation depending on the mode of study, specialization/field of study, year of study and the number of installments. Differentiating prices, universities take into account the number of part-time and full-time classes. extramural classes and daily. Thanks to the use of this strategy, universities have the opportunity to shape the volume of recruitment for part-time and full-time studies (e.g. a low price for part-time studies may attract a larger number of potential students). Price differentiation by specializations and fields of study occurs when universities offer a higher price for studies in specialties/fields that: are considered elite, are recognized for their high quality on the educational market (e.g. MBA), are very popular with potential students, and the labor market is in high demand for graduates with specific skills (e.g. IT, a foreign language in business). The prices of studies in specializations/faculties that are considered unattractive on the market, have been offered by universities for a short time, and where the market position of other schools is decidedly stronger, are set at a low level. The strategy of price differentiation according to the year of study assumes increasing the level of tuition fees in subsequent years of study and can be used by universities whose high operating costs make it impossible to adjust the level of tuition fees to the price level on the market. Differentiating prices according to the number of monthly installments is a response to students' financial problems. This approach assumes that with a fixed payment for the year of study, the monthly tuition fee is different. This strategy is a great convenience for students who can spread the cost of education over time. It increases the possibility of customers' access to services provided by schools. Currently, more and more non-public universities are introducing tuition fees divided into monthly installments.

Market game strategies are aimed at distinguishing universities from others operating in the market. The price is the main differentiator in the competition between universities. In this approach, price promotions and advertising slogans are used, such as "tuition fees from …", "studies for free", "first semester for PLN 1", price promotions, price diversification, etc.

The decision-making problem in universities is to determine such a level of prices that will ensure their development in the market of educational services. In the conditions of increasing price competition between schools, this task seems difficult to perform for non-public schools. Their main source of income is the private capital of recipients of educational services. In this situation, universities that actively differentiate prices have a chance for development. In their

calculations, these universities take into account competitive prices, quality of services provided, own brand and image, customer needs, education costs, and preferences of supporting organizations. At the same time, the pricing policy must be integrated into the system of other market tools which, through integrated impact on the market, shape the attractiveness of a university.

5. Research Methodology

In direct research, an attempt was made to assess the ability of non-public higher education institutions to adapt to the conditions of the competitive market of educational services. The research problem was to identify the factors determining the school's competitive advantage. Price was one of the most important factors creating the school's competitive position. Therefore, the primary research aimed to diagnose the implemented pricing strategies and determine the impact of prices on the educational activities of private higher education institutions in Poland. The research was preceded by the construction of a measurement tool in the form of a questionnaire addressed to representatives of non-public schools in Poland. The post-email survey method was used here. The research was carried out in 2015, and then repeated in 2021 –2022, to determine possible changes as to the factors determining the competitive advantage of a university. In 2015, 290 non-public schools were surveyed. In total, completed questionnaires were returned from 62 non-public universities. The questionnaire contained questions about the offer and market position in two periods 2010 and 2015. Taking into account these two moments was aimed at assessing the adjustment behavior of non-public higher education institutions towards on-going demographic decline. In turn, in the academic year 2020/21, 219 non-public universities operated (including 10 run by religious organizations) (https://www.gov.pl/web/edukacja-i-nauka/wykaz-uczelni-niepublicznie: access: 15.01.2022). Only 78 representatives of school authorities took part in the study. In the study conducted in the academic year 2021–2022, the respondents were to assess the ability to adapt to the prevailing conditions in the current period of operation. Participants of the study made a choice among many factors proposed in the questionnaire, which determine the success of their university, despite the demographic decline.

6. Findings

In the conditions of strong competition, demographic decline, and, above all, underfunding of non-public higher education institutions from public funds, the price policy shaped by these universities becomes particularly important and constitutes a challenge for them. According to representatives of non-public

schools, the educational activity of their universities is deprived of support from the state budget and budgets of local governments. Financing educational and research activities from these sources is small. Therefore, non-public schools must shape a pricing policy that will be profitable for them and, on the other hand, accepted by students. For many non-public universities, the difficult financial situation often precludes the improvement of study conditions.

Representatives of non-public schools consider the price of the services provided as one of the most important factors in determining:

- selection of private higher education institutions by potential students,
- the size of the recruitment for studies and constituting an important incentive to study in their schools.

During the demographic decline, the pricing policy of non-public universities changed. According to Pabian (2005), universities should use strategies based on high-quality educational offers. However, he does not recommend, for example, a rip-off strategy that offers low quality at a high price, or a savings strategy that offers a low price for a low-quality offer. Universities that offer high value to students at low cost may be in the best position. This strategy may contribute to an increase in the number of students.

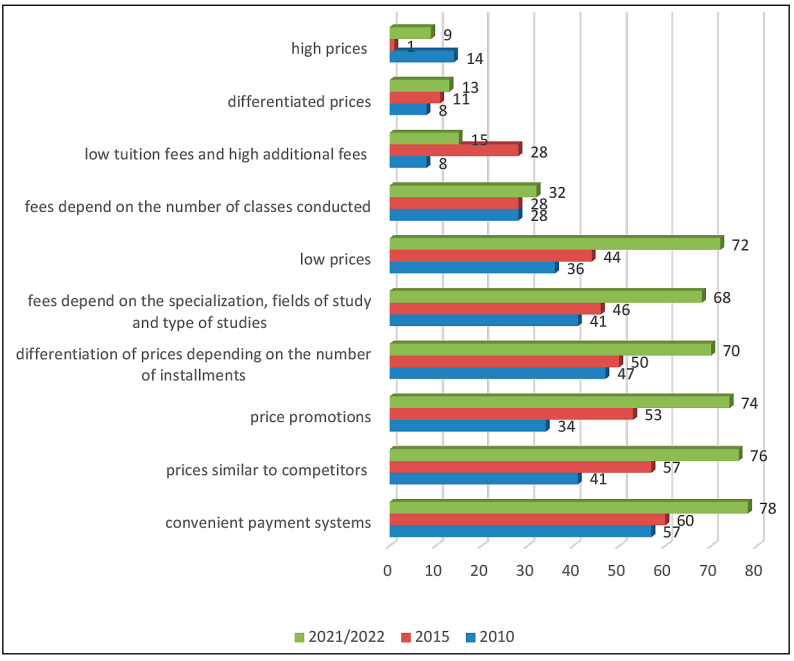

Figure 20.1. Pricing strategies of non-public higher education institutions in Poland
Source: Based on a survey conducted in 2015 and 2021/2022.

Representatives of non-public higher education institutions decided that convenient payment systems e.g., for a year in advance, in a semester, or monthly installments are the most important pricing strategy. Other pricing strategies in 2010 and 2015, as well as in 2021–2022, included prices similar to those set by competitors, price promotions, differentiation of prices depending on the number of installments, as well as fees depending on specializations, fields of study, types of studies (diploma, master's). The respondents' declarations indicate that in 2010 and 2015 and 2021–2022 their schools implemented successfully adopted pricing strategies. In the analyzed period, the pricing policy pursued by non-public schools in Poland was based primarily on low prices for educational services provided, taking into account the prices of competitors, but also the needs of and expectations of students.

In the period of progressing demographic decline, the university's pricing policy is more intensified. Schools, to attract students, lower prices for educational services, but also adjust them to the financial capabilities of their students. Currently, students have a greater opportunity to choose between education at public and private universities, which is why the price of educational services is becoming an important tool in the competition for students. Public universities will attract a much larger number of students for free full-time studies, as well as paid part-time studies, where the price for educational services is competitive relative to the prices of services at non-public universities. Lowering the prices of educational services by non-public schools threatens their existence, which is why they often implement cost-saving programs. Savings programs are undertaken to rationally manage school finances (Geryk, 2007). These programs consist primarily in reducing the cost of material consumption and energy, taxes and fees, lowering employees' salaries and employing them rationally, introducing limits on teaching hours, and reducing the number of specializations.

7. Conclusions

In the period of decreasing numbers of students, building a strong market position of a university is an extremely difficult task. The presence of substitutes for the offered educational service on the market and the limited demand poses a challenge for private schools in terms of properly setting and adjusting the price of educational services to the current and future needs of students. It should be remembered here that the student may interpret information about the price of the services provided as an indicator of their quality or loss of their monetary income (Bornemann and Homburg, 2011). Therefore, the level of prices set must be competitive relative to other schools, take into account the high quality

of services and acceptable to recipients. Universities, in particular private universities, must therefore conduct activities and make decisions in many fields, restructure to improve their situation on the market of educational services. In addition, the prevailing problem of dualism in the higher education market is characterized by differences in the functioning of public and private universities, which are subject to different regulations and have completely different autonomy in making decisions about the provision of services, including calculating their prices, makes it difficult for private schools to operate. A properly implemented pricing policy for non-public higher education institutions, taking into account the determinants of their functioning, can provide these schools with a stable position in the competition.

The role of the price of educational services in non-public education is significant, which is demonstrated by literature studies as well as the results of the author's research. The price affects the market, determines the behavior of students and competitors determines the size of enrollment, and is a significant incentive to study, and to a large extent determines the choice of a university and is considered an important tool for competing for students. Pricing strategies used by non-public universities are, first of all, similar to the prices of other universities in Poland. Representatives of non-public schools often lower the prices for the services provided, use various promotions, and adjust the prices to the financial capabilities of their students. Therefore, the pricing policy of non-public higher education institutions in Poland is primarily demand- and competition-oriented. As Appelt emphasizes, price formation is a supply-demand process, dependent on consumers' value judgments (Appelt, 2015). The diagnosis of the pricing strategies used by non-public universities in the period of demographic decline, as well as the impact of the price on the educational activities of these schools, can be a starting point for further research.

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