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Fenntartható Fejlesztés és Gazdálkodás Intézet

Hungarian University of Agriculture and Life Sciences, Institute of Rural Development and Sustainable Economy, Kaposvár Campus

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Editorial office

HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES,
INSTITUTE OF RURAL DEVELOPMENT AND SUSTAINABLE ECONOMY,
KAPOSVÁR CAMPUS

H-7400 Kaposvár, Guba Sándor u. 40.
H-7401 Kaposvár, P.O.Box 16.
Tel.:+36-82-505-800, +36-82-505-900
e-mail: rbs@uni-mate.hu

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EXPLORING INTERCULTURAL ONLINE MARKETING COMPETENCE AMONG TOURISM STUDENTS: A CASE STUDY FROM SLOVAKIA

Norbert BEŤÁK, Viktória BÍZIKOVÁ, Viktória GERGELYOVÁ
Constantine the Philosopher University in Nitra, Faculty of Central European Studies, Department of Tourism, Tr. A. Hlinku 1, 949 74 Nitra, Slovakia

ABSTRACT

Intercultural online marketing is an essential element in today's rapidly developing and diversifying world. Many fields, including marketing, are not only increasingly aware of this social and individual need, but are incorporating it into their tools and methods. A common method for targeted and effective marketing campaigns in tourism is to ensure that potential customers receive a response that is appropriate to the cultural background of the target audience. The aim of the present study is to examine tourism students' attitudes towards intercultural online marketing in the following areas: Knowledge in the field of Intercultural Marketing; Stereotypes about potential customers; How to target potential customers as well as the students; Cross-cultural knowledge/skills. The research was conducted among students of the Department of Tourism at the Faculty of Central European Studies of the Constantine the Philosopher University in Nitra, Slovakia. The questionnaire on which the research was based was completed by 135 respondents. The results of the survey provide an answer to the research question about the knowledge and perceptions of the future representatives of the tourism sector. The results obtained indicate that the extent of experience and knowledge in the field of intercultural online marketing is not sufficient. These findings have potential implications for further research to explore strategies for enhancing education and training programs aimed at bridging the gap in intercultural online marketing proficiency among future professionals in the tourism sector. Moreover, these findings suggest a need for collaborative efforts among academia, industry stakeholders, to develop comprehensive initiatives that address the evolving demands of the tourism industry in an interconnected world.
Keywords: tourism, online marketing, interculturality, targeting, perceptions

INTRODUCTION

In today's globalised world, information and communication technologies help businesses to realise their business activities and objectives faster, more accurately and over a larger spatial and temporal scale. The Internet as a marketing tool can be used to reach thousands of people in a target group. It is a current worldwide

phenomenon that reaches and significantly influences customer behaviour and decision-making.

In a competitive environment where supply exceeds demand, it is not easy for businesses to maintain a favourable market position. The aim of a business is not only to win customers, but also to retain them and ensure prosperity. Therefore, it is necessary to realise the necessity to invest time, money, and energy in the marketing activities of a business not only in the real world but also in the virtual world in the context of online marketing or digital marketing (*Beveridge,* 2021).

In the international marketing and business environment it is necessary to take into consideration, among other things, intercultural aspects. Understanding the influence of culture and cultural specificities is becoming a necessity not only in everyday life, but also in digital marketing activities. Recognizing cultural values and obtaining information within the existing differences between countries and cultures in communication and business pre-determines success in business. Cultural values, norms, attitudes, behaviours, customs, habits, artefacts, language function and perception influence how a product, service or brand is performing in a given market (*Sokolova*, 2022).

Tourism marketing professionals are becoming increasingly aware of the need to take cultural differences into consideration when communicating with potential target group customers so that they receive a response that is appropriate to their cultural background (*Lőrincz et al.,* 2020). Each culture, nation, national group, or ethnicity has their own specific communication symbolism, language and cultural customs that have historically evolved, changed and complemented each other so that its members understand each other. There is also a system of attitudes and a range of cultural stereotypes among them, which are also present in marketing as an image of the perception of society (*Végi & Csapó,* 2023).

The aim of our article is to identify some basic cultural stereotypes and attitudes in relation to Italian culture[1], to analyse their impact on the perception of students of regional tourism at the Department of Tourism and to highlight the knowledge and experience of future professionals in the tourism industry in the context of intercultural online marketing, which is a necessary professional competence in the professional equipment of successful graduates of study disciplines with a focus on tourism. Understanding intercultural online marketing is crucial for university students because it equips them with the skills and knowledge necessary to navigate and succeed in an increasingly interconnected global marketplace.

The existence of the interconnection between marketing and the Internet was the basis for the origin of a new form of marketing – digital marketing, or online marketing, also known as Internet marketing. *Chaffey and Smith* (2017) define digital marketing as the achievement of marketing objectives using digital technologies and media. These are tools such as websites, CRM systems and databases that can be used for the purpose of getting closer to the customer – being able to identify, anticipate and meet needs efficiently and effectively. In practice, it is the promotion and sale of

[1] The rationale behind our focus on this particular demographic stem from the engagement of our students with the cultural intricacies of Italy during the survey period, within the framework of a dedicated project.

products or services through digital channels such as websites, search engines, social media platforms, email and mobile apps.

It includes various techniques such as search engine optimisation (SEO), pay-per-click (PPC) advertising, content marketing, social media marketing and email marketing. The goal of online marketing is to reach a wider audience, increase brand awareness, generate leads, and ultimately increase sales and revenue for the business. It has become an essential part of any marketing strategy given the growing number of people who rely on the internet to make purchasing decisions.

In the context of the above, research and publications have been carried out by authors such as *Kingsnorth* (2022), *Manzoor* (2018), *Striš et al.,* (2009), *Koman et al.* (2020), *Janouch* (2014), *Dorčák* (2013).

Digital marketing helps marketers to sell their products and services with help of web portals according to the requirements of the customers. Consumers consider digital marketing to be a useful tool because it helps them to choose products, obtain more accurate and reliable information, and solve problems relatively easily. Today, tourism employees have to deal with multiple situations simultaneously and develop digital skills to address the ever-changing digitalised hospitality. The lack of basic digital literacy of tourism employees might hinder both the value and efficiency of tourism services and the daily operations of tourism companies (*Ivanova et al.,* 2022).

The cultural background of an individual can be an extremely strong factor in determining the consumers´ behaviour and the final decision-making process. In connection with considering the culture of customers within a target market, terms such as 'cultural marketing', 'ethnic marketing', 'cross-cultural marketing' or even 'intercultural marketing' are frequently used. In many cases these terms are regarded as synonymous due to the characteristic feature that closely links them. The common fundamental basis of these forms of marketing is respect for recognition of the cultural background of customers and its incorporation into targeted marketing activities (*Beták & Sándorová,* 2022).

Digital marketing in a multicultural environment offers solutions for launching product campaigns and advertisements that target specific groups of racially, ethnically, or culturally related consumers and customers. It is, among other things, a specific way of market segmentation, which seeks to target selected groups with appropriately formulated marketing activities. While the selling entity can create the same advertising regardless of the differences in its universal target groups, it can adapt its products as well as their promotion to smaller segments – both specific and interrelated groups. Such segmentation can take place in different ways and on the basis of the different characteristics identified for the target groups (*Beták & Sándorová*, 2022).

Over the past decades, the term "intercultural" has begun to evolve and offer new forms of study and research. First of all, intercultural communication has started to be discussed in professional circles based on the interaction between customers and companies. According to *Supeková & Janáková* (2014) research in this area deals with the mediating role in quality assessment, addresses the issue of cultural differences within business relationships, as well as the moderating role of engagement in the customer-employee relationship.

Culture defines values and beliefs, and marketing defines customer needs. These are important theoretical bases for defining cross-cultural marketing, which can be seen as a specialised part of marketing, or a theoretical discipline focused on marketing tools and strategies, as well as the types of marketing communication used in culturally different environments (*Usunier & Lee,* 2013).

The international marketing environment strongly influences marketing communication towards customers, especially through culture and the latter through its components, which are language, religion, history, but also education, family, social groups, work or leisure, etc. According to *Trompenaars and Woolliams* (2003), the new marketing paradigms are based on the three Rs: Recognise, Respect, Reconciliation.

Terpstra and Sarathy (2000) defined a cultural framework for marketing managers to help assess the cultural nature of the international environment. Several Slovak and foreign authors in their research works applied the conclusions of the extensive work of Kotler, Amstrong, Keller, Levitt, Middleton, Bowen, Makens, Xu, Smith in the field of marketing and the results in the field of culture research of prominent representatives of Taylor, Kroeber, Kluckhohn, Geertz, Hall, Sekaran, Thomas, Hofstede, Schein and others.

MATERIALS AND METHODS

The aim of the survey was to assess the perceptions of students towards intercultural online marketing in the following areas: knowledge of intercultural marketing, stereotypes about potential (Italian) customers, how to reach potential customers effectively, and students' intercultural knowledge/skills.

Research questions were as follows:

1. What is the extent of students´ knowledge in the field of intercultural online marketing?
2. To what degree do students hold stereotypes about potential customers in intercultural online marketing?
3. What are the most effective strategies for approaching potential customers according to students?
4. What are the prevailing intercultural attitudes among students in relation to online marketing?

The research was carried out among students of different years of two study programmes (Regional Tourism and Regional Tourism Management). Students have previous experiences with the topic, as intercultural communication and online marketing are integral components included in the curricula of the programmes. The questionnaire on which the research was based was completed by 135 respondents. Of the 135 respondents surveyed, 52 were of Slovakian, 72 of Hungarian and 11 of other (Ukrainian, Russian) ethnicity. In terms of gender distribution, 115 women and 23 men were included in the survey. In terms of the time interval of the survey, the survey was conducted in April 2023.

The questionnaire for the research was completed by students during their university courses, so the students who participated in the survey were those who attended the courses during that week. The survey was conducted anonymously, with

students completing an online google questionnaire. The questionnaire took approximately 15 minutes to complete. The research instrument for the study included an online questionnaire asking students about their views on intercultural online marketing. The online questionnaire consisted of 27 questions in total. Most of the questions were multiple-choice, in several cases the respondents had to select the option closest to their needs from the given options by simple choice. If they did not find an answer that was close to them, in most cases they were given the choice of other options. For eight questions, they were asked to express their level of agreement with a given statement on a Likert scale in tabular (matrix) format.

The questionnaire was divided into five main thematic areas. The first set of questions asked for the students' data. In the second part we measured their views on intercultural marketing. The third set of questions focused on the perceptions of stereotypes about Italians, the fourth set of questions focused on the targeting of Italian customers and the fifth set of questions focused on the assessment of intercultural knowledge and skills.

RESULTS AND DISCUSSION

Intercultural Online Marketing Skills

In this section we tried to find out the level of students´ skills and opinions on intercultural online marketing (IOM). We asked, among others, what they were thinking about IOM, whether they had come across the term ICM, whether the presented definition of intercultural marketing was true or false – over 80% chose a correct answer. Furthermore, we also asked whether they had encountered an intercultural marketing campaign ever. The *Table 1* illustrates students' answers to this question.

Table 1: Students´ knowledge of intercultural online marketing

Academic Level of Studies	Yes	No	I do not know	Total
Bachelor (BA)	23.8%	29.8%	46.4%	100%
Master (MA)	23.5%	15.7%	60.8%	100%
Total	23.7%	24.4%	51.9%	100%

The results show that half of the students (51.9%) do not know whether they have encountered this concept before. Slightly less than a quarter of students (23.7%) have encountered it and the same number (24.4%) have not encountered it (*Table 1*). A quarter of students at both levels (28.8% and 23.5%) said they had already encountered the concept of intercultural online marketing. Almost a third (29.8%) of students at bachelor's level and less than a fifth (15.7%) of students at master's level said they had not yet encountered the concept. Almost half (46.4%) of students at bachelor level and almost two thirds (60.8%) of students at master level could not give a clear answer. This can be explained by the fact that, although students are taught about interculturality and online marketing in their lessons, intercultural online marketing is not specifically included as an integral part of the curriculum.

The *Table 2* shows what students consider to be the most effective tools for the online marketing campaign.

Table 2: Most effective tools for implementing an online marketing campaign according to respondents

Factors	Bachelor (BA)	Master (MA)	Total
Cultural Factors	52.4%	47.1%	50.4%
Social Factors	17.9%	23.5%	20.0%
Legal Issues	1.2%	2.0%	1.5%
Demographic Conditions	7.1%	3.9%	5.9%
Political Issues	3.6%	2.0%	3.0%
Natural Facilities	3.6%	5.9%	4.4%
Infrastructure	1.2%	3.9%	2.2%
Tourist Attraction	13.1%	11.8%	12.6%
Total	100.0%	100.0%	100.0%

The results show that there is not much difference between the two groups. At both levels, students consider cultural factors to be the most important. About half of the students (52.4% and 47.1% respectively) selected this response. Social factors were ranked as the second most important asset (17.9% and 23.5% respectively), with tourist attractions coming in third (13.1% and 11.8%).

Stereotypes of the Potential Customers

The next set of questions asked students about their agreement with stereotypes about Italians. Students were asked to express their agreement with different statements. The *Table 3* illustrates the students' opinions.

Table 3: Students´ agreement with stereotypes about Italians

Agreements	True	False
Italians are regularly late.	72.6%	27.4%
Italians love good coffee.	86.7%	13.3%
Italians are obsessed with fashion.	78.5%	21.5%
Italians do not speak English well.	61.5%	38.5%
Italians are loud.	94.1%	5.9%

The results show that students, regardless of their level of education, overwhelmingly agree with stereotypes about Italians. Students at both levels of education had similar opinions, so only the overall results are presented.

Approach to potential customers

The third set of questions asked students how they would approach their potential customers. In one of the questions in this section, we asked respondents what they thought the main reasons were for Italians to visit Slovakia. The proportion of responses to this question is illustrated in the *Table 4*.

Table 4: Attractiveness of Slovakia according to students

Factors	Bachelor (BA)	Master (MA)	Total
Castles	21.4%	19.6%	20.7%
Mountains	14.3%	7.8%	11.9%
Spas	11.9%	21.6%	15.6%
Gastronomy	7.1%	2.0%	5.2%
Culture	7.1%	2.0%	5.2%
Entertainment	2.4%	9.8%	5.2%
Visiting Central Europe	29.8%	25.5%	28.1%
Skiing	2.4%	5.9%	3.7%
Nature Walk	3.6%	5.9%	4.4%
Total	100.0%	100.0 %	100.0 %

The results show that, regardless of their level of study, the highest proportions of students reported visiting Central Europe (28.1%), castles (20.7%) spas (15.6%) and mountains (11.9%). The reason for these responses is that these elements are in fact the most prominent in Slovak tourism and they are also the most prominent in advertising for Slovakia.

Attitude related to interculturality

The final section of the survey measured students' attitudes towards interculturalism. We asked them to what extent they consider themselves accepting of people of different cultures, religions, and ethnicities. The questionnaire included various statements, which respondents were asked to rate on a 5-point Likert scale (1 being the lowest and 5 being the highest). The *Table 5* illustrates students' acceptance of people of different religions, ethnicities, and cultures.

Table 5: Students´ acceptance of people of other religions, ethnicities, and cultures

Academic Level of Studies	1	2	3	4	5	Total
Bachelor (BA)	1.2%	3.6%	10.7%	42.9%	41.7%	100%
Master (MA)	0.0%	9.8%	19.6%	29.4%	41.5%	100%
Total	0.7%	5.9%	14.1%	37.8%	41.5%	100%

These results show that a very small fraction of respondents at both levels would be either totally or partially non-adopting. A proportion of students chose a neutral middle ground, but most of them, in both groups, claimed to be at least partially or fully accepting of other cultures.

In the next statement in this section, students were asked to rate how much they would like to work in a diverse workplace. The responses are illustrated in the *Table 6*.

Table 6: Workplace diversity among students

Academic Level of Studies	1	2	3	4	5	Total
Bachelor (BA)	2.4%	6.0%	26.2%	39.3%	26.2%	100%
Master (MA)	2.0%	9.8%	13.7%	37.3%	37.3%	100%
Total	2.2%	7.4%	21.5%	38.5%	30.4%	100%

The results show that almost a third of students (30.4%) would prefer to work in a diverse workplace, and more than a third (38.5%) would prefer to work in a diverse workplace. Almost a quarter of respondents (21.5%) have a neutral attitude. Only a fraction of respondents would prefer not to (7.4%) or not at all (2.2%) to work in such a place. Comparing the answers to the previous question (*Table 5*) and this question, the results show that although the highest proportion of students (41.5%) clearly stated that they are fully accepting of other cultures, less than a third (30.4%) would actually like to work in a diverse environment. For this question (*Table 6*), they preferred the partially agreed answer (38.5%).

When asked how attractive it is to work with members of other religious/ethnic/other communities, students responded as follows (*Table 7*).

Table 7: Cooperation with members of their religious/ethnic/other communities

Academic Level of Studies	1	2	3	4	5	Total
Bachelor (BA)	3.6%	3.6%	36.9%	34.5%	21.4%	100%
Master (MA)	11.8%	9.8%	29.4%	31.4%	17.6%	100%
Total	6.7%	5.9%	34.1%	33.3%	20.4%	100%

The results suggest that students' views on this issue are mixed. Almost a quarter of students (20.0%) find it very attractive, a third of students find it rather attractive (33.3%) and a third of students also give a rather neutral answer (34.1%). A fraction of students, on the other hand, said that they were not attracted to a diverse environment (5.9%) or not at all (6.7%). Comparing this with the answers to the previous two questions, the results show that when it comes to actual cooperation, the majority of students preferred to take the neutral middle ground. While almost half of the students (41.5%) are completely accepting of other cultures at elementary level, less than a third (30.4%) would like to work in a diverse environment and less than a quarter (20.4%) would like to cooperate with people from other cultures. Compared to the previous two questions, the percentage of acceptance has also decreased, and the percentage of negative answers is much higher.

CONCLUSIONS

Our questionnaire survey based on a convenience sampling clearly shows that the extent of experience and knowledge in the field of intercultural online marketing is

not sufficient, given that only about one-fifth of the respondents, according to their affirmative answers to the question asked, have encountered an intercultural digital campaign. The remaining responses indicate a negative answer and a relatively high percentage, more than half, of the students do not know the answer.

The aspect of formal and informal education of young people in this area is very significant. It can be concluded that in terms of content analysis of education, knowledge in the field of online marketing is key in study fields with a focus on tourism and is part of the professional competences in the areas of information and communication technologies, competences towards entrepreneurship, initiative, creativity, language competences, and competencies to understand culture and express it with information and communication technology tools.

The results of the research can definitely be applied in the measures taken in the field of education and upbringing; they can also be reflected in the formulation of the educational objectives of the key teaching subjects. Furthermore, intercultural online marketing has the potential to significantly influence customer behaviour as well as customer decision-making. This is also why future directions of research could be directed towards these areas in order to learn about the preferences of customers from different cultural backgrounds, but also to improve the process of personalisation and segmentation.

To the research question to what degree students hold stereotypes about potential customers of intercultural online marketing, it can be clearly answered in our research that this represents a significant aspect. Cultural stereotypes are the result of cultural cognition and cultural literacy. They are formed and shaped by the extensive influence of factors such as enculturation, human socialisation, the influence of education in schools, and the family, peers, the media and various institutions in particular are very strong influences (*Bíziková*, 2016).

It should be noted that cultural education in secondary and higher education in Slovakia is predominantly monocultural and teaching is narrowly oriented towards the home cultural environment. Despite the European Union's emphasis on the European dimensions of education and cross-cutting themes such as multicultural education, cultural tolerance and cultural diversity, these concepts are dealt with in schools without a deeper understanding, and stereotyping of other cultures or minority views persists.

The dialogue between actors in the educational environment should be more intensive. The school environment is not separate from the social environment and the stereotypes experienced. In the context of intercultural online marketing, it is desirable to think about the world and the person from different perspectives. On the positive side, despite their tendency to stereotype, respondents largely perceive themselves as culturally open and tolerant in their self-assessment, especially in relation to culturally mixed work environments.

Regarding the research question about effective customer outreach strategies from the students' perspective, the Italian customers are expected to be interested in tourism attractions such as Central Europe (destination Slovakia as part of this product), castles and spas. It is evident that Slovakia as a destination is mainly visited by foreign tourists from neighbouring countries: Czech Republic, Hungary, Poland

and Austria. Cultural and sightseeing tourism and spa tourism are, figuratively speaking, the 'golden eggs' of tourism in Slovakia. Would an Italian tourist also be interested in the offer of our castles and spa resorts? It would be a challenge for an intercultural digital campaign to attract the attention and increase the interest of the Italian tourists in tourism products in Slovakia and motivate them to visit them. The digital campaign must definitely identify the focal components of the culture determining the values of the Italian society, on the basis of which the customer generally makes decisions when choosing goods and services or tourism products. It is precisely the cultural specificities that the creators of a digital campaign must adapt to in the context of online marketing.

The prevailing intercultural attitudes of students in relation to intercultural marketing, according to our research, are characterised by a significant influence of cultural stereotypes. Yet, paradoxically, within self-reflection, students declare acceptance of cultural diversity. What needs to be developed in students is that no culture is inferior or superior, but simply different, and needs to be accepted on a rational and emotional level as well. Of course, it is quite difficult to step out of "one's" culture and view the other one objectively and without any positive and negative stereotypes (prejudices).

Although this paper had a case study to contribute to a deeper understanding of intercultural digital marketing competencies, it is important to note the limitations of this research. It is not a representative survey. The results obtained are of an illustrative, indicative character. In a future survey with this focus, it is necessary to increase the sample size to obtain valuable data, to complement it with Italian students in order to increase the reliability and validity of the results in the survey.

REFERENCES

Beták, N., & Sándorová, Z. (2022). *Intercultural Communication and Digital Marketing in a Tourism Context*. Constantine the Philosopher University in Nitra.

Beveridge, I. (2021). *Intercultural Marketing: Theory and Practice*. Taylor & Francis Group.

Bíziková, V. (2016). Kontexty kultúry a edukácie. *Motus in Verbo*, *5*(1), 14–20.

Dorčák, P. (2013). *eMarketing : ako osloviť zákazníka na internete.* EZO.sk.

Chaffey, D., & Smith, P. R. (2017). *Digital marketing excellence: planning, optimizing and integrating online marketing.* Routledge.

Ivanova, M., Ivanov, S., & Petkova, I. (2022). Digital skills gaps in the Bulgarian tourism industry. *Acta Turistica*, *34*(2), 113-129. https://doi.org/10.22598/at/2022.34.2.113

Janouch. V. (2014). *Internetový marketing : přilákejte návštěvníky a maximalizujte zisk.* Computer Press.

Kingsnorth, D. (2022). *Digital marketing Strategy. An Integrated Approach to Online Marketing.* Kogan Page Ltd.

Koman, G., Holubčík, M., & Kubina, M. (2020). *Digitálny marketing. Vybrané nástroje prezentácie podniku v online priestore.* Žilinská univerzita v Žiline.

Lőrincz, K., Banász, Zs., & Csapó, J. (2020). Customer Involvement in Sustainable Tourism Planning at Lake Balaton, Hungary – Analysis of the Consumer Preferences of the Active Cycling Tourists. *Sustainability 12*(12), 5174. https://doi.org/10.3390/su12125174

Manzoor, A. (2018). *E-commerce 2018*. Amir Manzoor.

Sokolova, H. (2022). Cross-Cultural Marketing Research as a Tool in Studying Consumer Psychology Across Borders. *Proceedings of University of Ruse*, *61*(5.1) 143-148. https://conf.uni-ruse.bg/bg/docs/cp22/5.1/5.1-21.pdf

Striš, J., Vodák, J., Kubina, M., Jankal, R., & Soviar, J., (2009). *Marketingové riadenie.* Žilinská univerzita in Žilina.

Supeková, S., & Janáková, H. (2014). *Interkultúrne aspekty medzinárodného marketingu. Uplatnenie v zmiešaných spoločnostiach.* Wolters Kluwer.

Terpstra, V., & Sarathy, R. (2000). *International Marketing.* Dryden Press.

Trompenaars, F., & Woolliams, P. (2003). A new framework for managing change across cultures. *Journal of Change Management. 3*(4), 361-375.

Usunier, J. C., & Lee, J. A. (2013). *Marketing Across Cultures*. Pearson Education.

Végi, Sz., & Csapó, J. (2023). Towards A Better Understanding Of The Dynamics And Impacts Of Consumer Behaviour And Travel Decisions In Response To Crises – An SLR Based Analysis. *Acta Turistica*, *35*(1), 79-111. https://doi.org/10.22598/at/2022.35.1.79

Corresponding author:

Norbert BEŤÁK
Constantine the Philosopher University in Nitra
Faculty of Central European Studies
Department of Tourism
Tr. A. Hlinku 1, 949 74 Nitra, Slovakia
Tel.: +421 37/6408837
e-mail: nbetak@ukf.sk

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CURRENT SCENARIOS OF CIRCULAR ECONOMY IN BRAZIL AND ECUADOR: REVIEW ARTICLE

Maria Lourdes ORDONEZ, Caroline MARTINS
Hungarian University of Agriculture and Life Sciences, Doctoral School of Economy and Regional Planning, Gödöllő, Páter Károly utca 1., Hungary

ABSTRACT

The circular economy offers alternatives to provide concrete solutions to productive, environmental, and social challenges worldwide, especially for developing countries such as in Latin America and the Caribbean region, where the economic models are heavily dependent on natural resource exports. The literature review briefly describes the current scenarios of the circular economy in two Latin American countries (Brazil and Ecuador). The paper describes the importance of the Circular Economy (CE), the public policies implemented in these countries during recent times, and the main challenges they face to achieve a transition from the traditional economic model to a more sustainable one. At the global level, there are various mechanisms and policies that drive the transition from a linear to a circular economy. However, developing countries such as Brazil and Ecuador do not yet have specific policy frameworks that encourage the circular economy as a governmental policy. The outstanding challenges and actions for achieving CE in the case of the countries considered remain large and require the joint effort of all actors involved at the public, private, academic and public care levels in general.

Keywords: Circular economy (CE), Latin America and Caribbean (LAC), Policies, 3R principals, Challenges
JEL codes: O54, Q01, Q20, E60.

INTRODUCTION

Latin American and Caribbean (LAC) national economies have heavily depended on natural resource exports for the last two decades. Until now, many countries have yet capitalized on this specialization in natural resource exports. In this context, the circular economy offers an opportunity for intersectoral diversification to generate added value domestically, contributing to SDG 8 (sustainable economic growth and decent work), SDG 9 (sustainable industrialization), and SDG 12 (sustainable consumption and production (*Schröder et al.*, 2020).

The circular economy offers alternatives to provide concrete solutions for the production, environmental and social challenges of our times. Nevertheless, to fully avail the region's potential, a new vision must be reflected in strategies, policies, and programs that promote a more inclusive and sustainable model that does not sacrifice growth, efficiency, or profitability (*IICA*, 2018). In recent years, the circular economy

model has gained high-level political attention and support in Latin America and the Caribbean (LAC). The region has already launched more than 80 public initiatives relating to the circular economy.

In the ideal scenario, the circular economy transition achieved by Latin America and the Caribbean countries could produce abundant renewable energy and materials driven by regenerative and circular business models that support biodiversity, enable it to flourish, and keep it clean from waste and pollution. It is a transition based on nature-inspired solutions unlocking world-leading innovation and well-being improvement (*CEC*, 2021).

The World Conservation Monitoring Centre (WCMC) of the United Nations Environment Program has identified a total of 17 mega-diverse countries, Brazil and Ecuador included**.** According to *Iberdrola* (2018), these countries possess an essential percentage of the world's arable land, freshwater resources and are one of the primary producers of sustainable biomass.

Despite having invaluable natural resources, both countries have limitations in adopting sustainable policies that allow the transition of their traditional economies to a circular model. In each country, certain legal frameworks have been outlined to facilitate the adoption of the circular economy. However, they have yet to be implemented directly with the different societal actors.

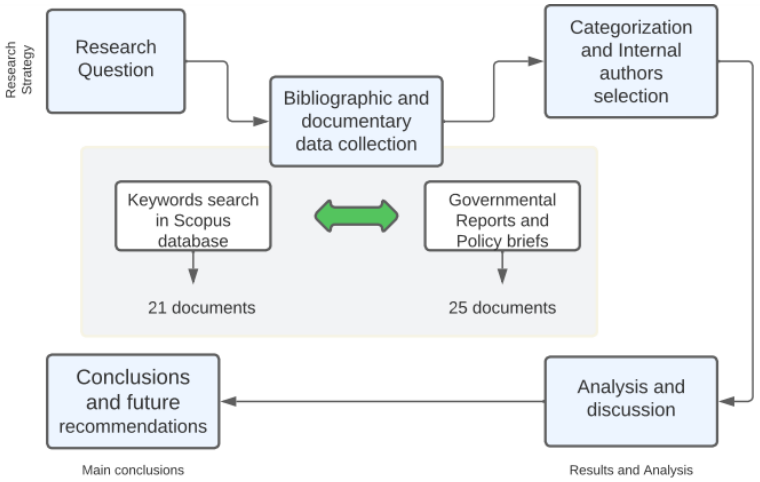
This review article briefly describes the current circular economy scenarios in two Latin American countries (Brazil and Ecuador). The paper describes the importance of the circular economy in the two countries, the public policies that have promoted this model in recent years, and the main challenges they face to achieve a transition to the circular economy.

MATERIALS AND METHODS

The methodological approach of the research is a qualitative literature review based on secondary data obtained mainly from official government documents, international reports, and journal articles related to the research topic. The information obtained from the bibliographic databases was categorized according to the issues addressed in the literature review, from general aspects of the circular economy to particularities in the public policies of the two countries under study. The following search of keyword and exclusions were applied in Scopus database: TS=("circular economy") AND ("Brazil") AND ("Ecuador") AND (LIMIT-TO (EXACTKEYWORD , "Circular Economy")) AND (LIMIT-TO (AFFILCOUNTRY , "Ecuador") OR LIMIT-TO (AFFILCOUNTRY , "Brazil")) AND (EXCLUDE (SUBJAREA , "PHYS")). Once the evaluation was done, the authors concluded with the main challenges that the circular economy could have as an economic model in Brazil and Ecuador. *Figure 1* describes the flow chart used in the research as mentioned earlier.

According to *Snyder* (2019), qualitative literature reviews perform an essential role as a foundation for all types of research. It can serve as a basis for knowledge development, create guidelines for policy and practice, provide evidence of an effect, and have the capacity to engender new ideas and directions for a particular field.

Figure 1. Flow chart of the research



The primary purpose of a literature review, according to the *Western Sydney University* (2017), is to obtain an understanding of the existing research relevant to a particular topic or area of study and to present that knowledge in the form of a written report. In addition, a bibliographic review also makes it possible to present important concepts in the field of the study and to obtain information to formulate some recommendations about the problems addressed.

LITERATURE REVIEW

Concept of circular economy

According to (*European Parliament*, 2023) the circular economy "*is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible*". The fundamental principles of circular economy are to reduce, recycle and reuse all types of materials, including metals, minerals, and biological resources (*IICA*, 2018). The concept of the circular economy has been chiefly associated with adopting closing-the-loop" production patterns within an economic system and increasing resource use efficiency, focusing on urban and industrial waste (*Ghisellini et al.*, 2016).

These concepts began to develop in response to the crisis of the traditional model due to the need to deal with the limited resources (*Coste-Maniere et al.*, 2019). Especially for natural resources from where humanity has access to most of the raw materials, addressing the increasing demand for food, feed, energy, materials, and products (*Gottinger et al.*, 2020). It also stems from the idea of closing economic and ecological loops in resource flows, reducing both virgin material inputs and waste outputs (*Haas et al.*, 2015). According to *Valavanidis* (2018), one of the main objectives of CE is to increase the harmony between economy, environment and society through a focus on resource and waste efficiency. Along with the definition

of circular economy, the development of newer theories such as regenerative design, performance economics, cradle-to-cradle, biomimicry and blue economy merged as complementary aspects of this concept (*Ghisellini et al.*, 2016) .

The French environmental agency (ADEME) defined the circular economy as an economic system of exchange and production intended to increase the efficiency of the use of resources at all stages of a product's life cycle, including goods and services (*Ministry of Environment of France*, 2016). *Figure 2* shows the scheme of the three areas and seven pillars of CE, where the main aim is to avoid the creation of ultimate waste that would exit the production system as much as possible.

Figure 2. Three pillars of Circular Economy

Source: Based on *Héry & Malenfer* (2020)

To link the bioeconomy concepts with the principles of the circular economy, researchers developed another exciting term, „biomass-based value web" (*Virchow et al.*, 2016). This impression considers the cascading use of biomass and the use of by-products from biomass processing, leading to an interlinkage of different value chains. For example, the research of *Scheiterle et al.* (2018) present a case study of Brazil's sugarcane sector.

Main challenges and opportunities of the Latin America and Caribbean Region

According to *Schröder et al.* (2020), the LAC[1] is the most urbanized region in the world with more than 80 per cent of its total population living in cities in 2018. The cities and the municipal governments of this region are key players in the circular economy transition. Most cities face significant challenges in dealing with municipal solid waste. The amount of waste generated in the region is expected to increase from

[1] Acronym of Latin America and the Caribbean

541,000 tons/day in 2014 to 670,000 tons/day by 2050. Currently, all countries in the region rely overwhelmingly on the use of landfill or illegal dumping as their primary methods of final disposal. A critical objective of circular economy transitions for cities across the Latin American and Caribbean region should be to reduce pollution by supporting communities impacted by mismanaged waste.

The extractive industries play an important role in the economies of many LAC countries. For instance, in both Ecuador and Colombia, petroleum oils, oils from bituminous materials, and crude oil accounted for approximately 30 percent of export revenues in 2017. Similarly, the mining sector plays a prominent role in the economies of Brazil, Chile, Colombia, Guyana, and Peru. The extractive industries would face the biggest challenges in the circular economy transition in the LAC region due to reduced demand for some primary materials and the impact of predicted regulatory limitations imposed on industries relying on linear business models (*Hoof et al.*, 2023).

Forest resources and biodiversity are crucial for the circular economy. Six of the world's 17 'mega diverse' countries are in Latin America and the Caribbean region: Brazil, Colombia, Ecuador, Mexico, Peru, and Venezuela. In this region, forests account for about 46 percent of the total land area, and the region is home to 57 percent of the world's primary forests, the most important forest resources in terms of biodiversity, conservation, and climate. However, there is an urgent need to halt and reverse biodiversity loss in the LAC countries; several studies demonstrate that large-scale bioenergy production competes with food production for space, with potentially severe consequences for food security and land degradation (*Guénard et al.*, 2022). Countries in the LAC region should be able to develop their bioeconomy without jeopardizing their contributions to the region's food security and biodiversity protection targets.

In general, terms shifting toward a circular economy that utilizes biological resources more efficiently and promotes sustainable product development that can reduce fossil fuel dependence will require new policies, institutions, and capabilities that prompt and guide the behaviour of stakeholders to maximize potential benefits and minimize the costs involved in transitioning toward this model (*IICA*, 2019). The strategies to be implemented must include general policies and new approaches in areas such as science, technology, and innovation. The strengthening of the human resource component to undertake new CE activities and to devise various rules, regulations, market instruments to guarantee the sustainable and safe development of these new opportunities to capitalize on the circular economy (*OECD*, 2020).

Brazil

A study by the National Confederation of Industry (CNI) with 1.261 industrial companies found that circular economy practices are still not knowledgeable. According to the survey, only 30% of the companies answered that they had heard about the circular economy before the survey, while 70% were introduced to the topic for the first time (*National Confederation of Industry*, 2018).

Regarding the practices related to a circular economy the companies were already developing, according to the numbers of the survey mentioned, 76.5% of them already employ activities aimed at circular economy without knowing it is practicing the initiatives because of their advantages. Cost reduction was the primary motivation

mentioned by entrepreneurs (75.9%), followed by the possibility of generating jobs (60%) and increasing operational efficiency (47.3%). The opportunity to create a new business (22.6%) and most (72.4%) of the participants believe that the actions help to build customer loyalty. Activities are related to the circular economy "Process optimization" is the most common one being indicated by 56.5% of the company's respondents. In second place, with 37.1%, comes the use of „Circular Inputs," and third place with 24.1% „Recovery of resources" (*National Confederation of Industry*, 2018).

The implementation of the circular economy, according to *Ritzén & Sandström* (2017) presents some barriers in the transition process, among which the authors cite financial, operational, structural, attitudinal, and technological ones. For Brazil, not so different from what has been happening in other countries, the shift to a circular economy is not presented as a simple process; some barriers and limitations are identified. *Silva et al.* (2019) made a study analysing the case of Brazil, identifying the obstacles that need to be overcome and that constitute how challenges are related to the following aspects:

1. „*Insufficiency in the separation of waste in the source.*
2. *low acceptance of recycled products by consumers and companies.*
3. *Lack of investments and incentives political and geographic dispersion for companies of the same cycle*".

Encouraging overcoming challenges, such as insufficient separation of waste and poor acceptance of recycled products, must be guided by environmental education actions at all levels. However, overcoming these challenges involves activities that develop an awareness of the need for changes toward an ecological economy in a systemic way. This implies strengthening environmental policies, more specifically, the PNRS.

Environmental education must be aligned with information that can develop awareness for environmental protection. In this sense, it is necessary to establish social, economic, and ecological responsibilities through changes in attitudes and understanding of the relationship one must have with environmental issues. These transformations involve educational processes not only formal but in the most varied ways that can develop awareness for environmental citizenship (*Fang et al.*, 2023).

Regarding the lack of investments, there is a long way to go. At the municipal level, the difficulties in waste management are related to financial and technical capacity, which compromises the effectiveness of the PNRS (*Alves et al.*, 2016). The problem is evidenced by the delay in preparing the Municipal Integrated Management Plans of Solid Waste (PMRIRS); according to the National Confederation of Municipalities, of the total number of municipalities, only 38.2% had their plans finalized in 2017.

The issue of geographic dispersion is emblematic of Brazil, marked by significant economic differences and communities in their regions. This aspect can make it challenging to integrate processes between companies so that they can share their production.

Another aspect considering a transition challenge for the circular economy is related to the rules of the indirect taxation system in Brazil, which allow taxes to be levied more than once on the same added value. Every time a product is sold, part of the tax is charged repeatedly, making more expensive products (*OECD*, 2021).

Ecuador

According to *Sucozhañay et al.* (2022) in Ecuador, small business[2] and citizen collectives have been practising circular activities such as electrical equipment repair, shoe repair, tailoring, rental stores, organic food production or bulk stores for a long time. However, the concept of the CE as an economic model is relatively new. Some essential Ecuadorian companies have started incorporating the sustainability approach in their business model by implementing economic, environmental, and social strategies related to the CE. Nonetheless, the adoption of circular practices is still uncertain at the country level since the financial system still depends on the extraction and production of raw materials and fossil fuels without sustainable practices of circularity.

Although several initiatives aiming to improve resource extraction, sustainable consumption, reuse of waste materials to manufacture new products, and energy efficiency over the last decade, green innovation and productivity have until recently been very rarely successful in the country, in the context of Ecuador's climate change action, circular economy and bioeconomy provide a framework for a transition to a more diversified, post-oil economy, based on responsible management of natural resources, like oceans, fresh water, and forests, increasing the share of production with high technological intensity and incorporated value added, including digitalization, private export-oriented research in benefit of youth and future generations. However, in the future it is necessary to invest in the higher education sector and academia to generate skills to promote innovation, as well as labour force training programs (*EEAS*, 2021).

Policies and laws to support CE

Governments play a significant role in the transition to the circular economy, which is already on the public agenda of international politics. To better understand the role played by governments and government agencies in this area, it is essential to be aware of the leading public management tools that can be used to promote this transition. The primary public policy instruments adopted worldwide for this purpose are the following ones: regulatory instruments; tax-related actions; measures in support of research, education, and information; collaborative platforms; financial aid; investment in infrastructure; and subsidies for business(*Green Industry Platform*, 2015).

A worldwide movement toward implementing strategies for the transition toward the circular economy model can be observed. The principles behind the circular economy are familiar, and they are enclosed in several laws worldwide. The global scenario shows paths that some countries have taken with satisfactory results. The first public policy directly focused on implementing the circular economy is a Chinese law enacted in 2009, as seen in *Table 1*, but European countries are the ones that have made the most progress in adopting public policies for the transition from a linear to a circular economy. In 2015, the European Union (EU) devised a plan for implementing the circular economy in its member countries. In addition to this plan, member countries have adopted specific national public policies for different sectors of their economy (*National Confederation of Industry*, 2020).

[2] Refers to formal and informal business

Table 1. Summary table of International Public Policy

Countries	International Public Policy	Captions for the summary	Year
China	Circular Economy Promotion Law	Laws and regulations; subsidies; tax-related measures; waste; resources; industrial symbiosis; circular cities; product-as-a-service; state level.	2009
Japan	Law for the Promotion of Effective Utilization of Resources	Laws and regulations; subsidies; tax-related measures; waste resources; circular inputs; design for circularity; state level; and public procurement.	2015
Canada	Resources Recovery and a Circular Economy Act	Tax-related measures; waste; circular inputs; state level; design for circularity; resource recovery.	2016
Germany	The German Resources Efficiency Program (PROGRESS)	Agreements; laws and regulations; waste; resources; product-as-a-service; sharing; circular inputs; design for circularity; state level.	2012
Belgium	Circular Flanders kick-off statement	Agreements; circular cities; public procurement; national level; resources.	2017
Denmark	Denmark without waste – Recycle more, incinerate less	Subsidies; tax-related measures; waste; circular inputs; state level.	2013
Spain	Estrategia d'impuls a l'economia verda e a l'economia cricular	Subsidies; tax-related measures; waste; resources; public procurement; design for circularity; energy recovery; national level.	2015
Finland	Leading the cycle – Finnish road map to a circular economy	Laws and regulations; subsidies; tax-related measures; waste; resources; public procurement; visualization; circular inputs; design for circularity; energy recovery; state level.	2016
France	Institut de l'Économie circulaire White paper on the Circular Economy of Greater Paris 50 measures for a 100% circular economy (roadmap)	Agreements; subsidies; resources; waste; circular cities; public procurement; circular inputs; product-as-a-service; sharing; design for circularity; state level.	2015
The Netherlands	Waste to Resource Programme (VANG)	Agreements; laws and regulations; subsidies; circular cities; waste; resources; sharing; design for circularity; product-as-a-service; circular inputs; state level; product life extension.	2013
United States	USDA Bio Preferred Program	Resources; public procurement; circular inputs; state level.	2002
South Africa	The Western Cape Industrial Symbiosis Programme (WISP) The Recycling and Economic Development Initiative of South Africa	Tax-related measures; laws and regulations; resources; waste; product-as-a-service; sharing; design for circularity; industrial symbiosis; circular inputs; state & local level.	2012
Australia	Australian Packing Covenant (APC)	Agreements; Laws and regulations; resources; waste; circular inputs; state level.	2017
European Union	Closing the Loop	Subsidies; laws and regulations; resources; waste; circular inputs; design for circularity; continental; energy recovery.	2015

Source: based on, (*National Confederation of Industry*, 2020)

The transition to a circular economy is a complex process that requires a broad, multi-level and multi-stakeholder participation and can be facilitated by appropriate policy interventions, as noted *Milios* (2021) in his study about the Circular Economy Taxation Framework.

In the specific case of tax regulation, which includes aspects directly related to the circular economy, regions such as the European Union, through the European Green Deal and the Circular Economy Plan, are promoting a series of reforms to the current tax system that aim to reduce greenhouse gas emissions, accelerate the transition to a circular economy and balance the tax burden on actors that are the highest consumers (*Eboli et al.*, 2021).

In the case of Latin America, there are some countries that have some specific local initiatives and incentivise companies that have sustainable circular economy practices. For example, in Mexico, the Circular Economy System of Querétaro has tax incentive policies related to: (i) CO2 emissions, (ii) waste disposal and storage, and (iii) compensation tax for the extraction of raw materials. These tax-related regulations represent incentives for companies to reduce CO2 emissions, waste generation and substitute raw material extraction and resource conservation (*Hoof et al.*, 2023).

In the case of Colombia, in order to achieve minimum targets related to water and energy consumption, Resolution 0549 of 2015 establishes parameters and guidelines for new sustainable buildings. Similarly, regarding energy efficiency, Resolution 196 of 2020 establishes requirements and procedures for accessing tax benefits related to energy efficiency management projects (*Hoof et al.*, 2023).

Brazil

Brazil has not adopted a national strategy to implement a circular economic model. However, some policies, programs, and plans are underway, to a certain extent they are intended to foster sustainability through circular practices and address sustainability-related topics (*Sanches et al.*, 2022).

The National Solid Waste Policy (PNRS) is the first public policy addressing waste management more comprehensively, leading to discussions on different management tools used in circular economies. Promulgated in August 2010, the National Solid Waste Policy (Law No. 12,305/2010) was a milestone in Brazilian Law for dealing with solid waste management in Brazil. It contemplates concepts of shared responsibility for product lifecycle management and recognizes reusable or recyclable solid waste as an asset with economic value, in line with circular economy concepts.

Accountability raises concerns about proper disposal in ways that are not harmful to human health and the environment. The policy reinforces the responsibility of waste generators, including the whole chain involved: manufacturers, importers, distributors, and traders. Concerns about the final removal and impact of waste further increase the importance of policy instruments such as reverse logistics, promoting reuse, recycling, and more efficient production processes (*National Confederation of Industry, 2020).*

PNRS defines differentiating solid waste from residues as *"solid residues that, once all treatment and recovery possibilities through available and economically feasible technological processes are exhausted, cannot be reused for any possible purpose and must be disposed of in an*

environmentally appropriate way" suggesting that solid waste can be utilized. The PNRS provides for an obligation to structure and implement a reverse logistics system for manufacturers, importers, distributors, and traders of pesticides for their packaging, and residues; batteries; tires; lubricating oils; fluorescent, sodium, mercury vapor lamps and mixed light lamps; and electronic products and their components (*Cosenza et al.*, 2020). It ends the end-of-line concept by turning the production process into a circular one where components of final products that would otherwise be disposed of in landfills are reused as raw material.

The Law also provides incentives for several actions designed to improve solid waste management, as in its article 42, according to which public authorities may take inductive measures and provide financing lines to support, on a priority basis, initiatives intended to prevent and reduce the solid waste generation in manufacturing processes; develop products with lower impacts on human health and environmental quality in their life cycle; selective structure collection and reverse logistics systems; develop research focused on clean technologies applicable to solid waste; and develop environmental and business management strategies designed to improve production processes and allow for waste to be reused *(National Confederation of Industry*, 2020).

The objectives of the PNRS are in line with the pillars of the circular economy when it comes to reducing waste generation, encouraging the adoption of sustainable production and consumption patterns, improving clean technologies, and stimulating the adoption of reverse logistics and recycling systems (*de Mattos & de Albuquerque*, 2018).

Brazilian public policy on the circular economy is still very incipient, but its concepts are contemplated in various laws, plans, programs, and projects, albeit in a decentralized way (*Celidônio de Campos*, 2019; *National Confederation of Industry*, 2020). It is crucial to create a national strategic plan contemplating concrete measures to foster research, technologies, and business models designed to promote the development of the circular economy in line with Brazil's economic development needs. *Table 2* summarizes the central National Policies related to the circular economy in Brazil that was possible to find based on the secondary data research.

Table 2. Summary table of National Policies

Sector	National Policies
Solid Waste	Agreements; public procurement; waste; circular inputs; national.
Climate Change	Laws and regulations; subsidies; tax-related measures; circular inputs; energy recovery; national.
Energy	Laws and regulations; subsidies; tax-related measures; circular cities; sharing; national; energy recovery.
Water Resources	Laws and regulations; subsidies; tax-related measures; resources; circular inputs; national.
Forest Resources	Laws and regulations; subsidies; tax-related measures; resources; circular inputs; national.

Source: Based on different official database

Within the limits set by the PNRS, and in addition to federal legislation, the states and municipalities also act autonomously in establishing their own regulations, standardising waste management and reverse logistics. Within these local regulations and programmes, priority is given to integrated solid waste management, which follows a priority order of action: (i) prevention, (ii) reduction, (iii) reuse, (iv) recycling and treatment of residual waste (including mixed waste), (v) environmentally sound final disposal of residual waste, i.e. waste whose potential for use is exhausted because it is deemed unfit for any other type of use (*Cosenza et al.*, 2020).

Ecuador

Significant foundations for a circular policy framework were laid down between 2014 and 2018 in Ecuador. The circular economy-related concepts were integrated into key national legislation; since 2008, the constitution of Ecuador has recognized nature as a subject of rights[3], becoming the first country in the world to assign it that legal category (*UCUENCA*, 2021).

Ecuador's circular economy future is manifested in strategic policy initiatives like (*European Commission*, 2021):

- National Strategy and Action Plan for the Circular Economy Transition issue in 2021,
- Law for the Circular Economy (under approval by the National Assembly), and the endorsed National Development Plan 2017- 2021 ("Toda una Vida") which embraces principles of the circular- and the bio- economy, encouraging recycling and extending product lifetime.
- Ongoing policy processes include the Law for Extended Producer Responsibility, a specific normative for electronic waste (expected to be adopted in 2021), and updates to the legislation on nonrecyclable plastics.

Commitment to the Circular Economy was endorsed with the National Pact for a Circular Economy in 2019, signed by over 330 supporting parties who drive the country's transition to a circular economy along nine strategic axes that include industrialization and use of waste, sustainable and resilient infrastructure, eco-design, sustainable business, the progressive substitution of plastics and development of CE indicators (*European Commission*, 2021).

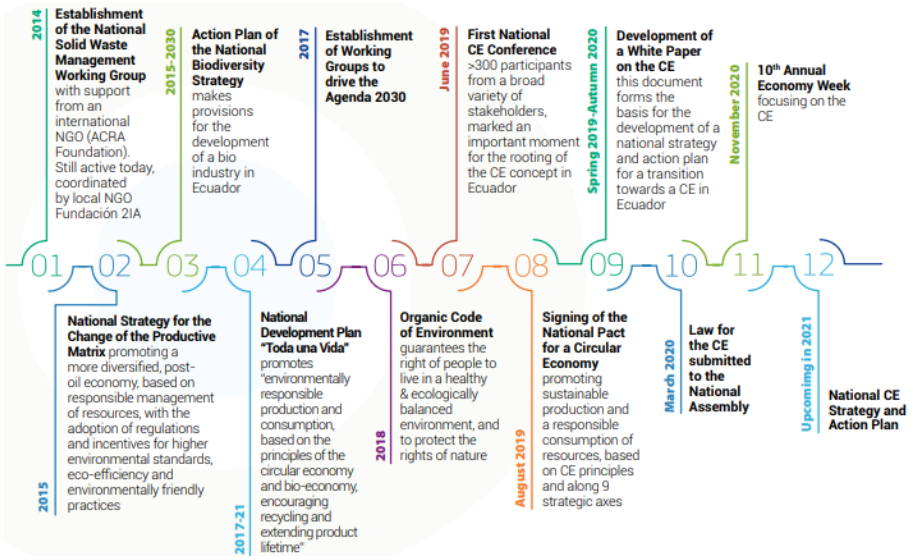
According to the Ministry of Production, Foreign Trade, Investment and Fisheries, the greatest challenge for the State and Ecuadorian society is to move from a linear economy to a circular one, consuming fewer raw materials, optimizing production processes, extending the useful life of products and materials, generating energy, and making better use of waste (*Vice-Presidency of Ecuador*, 2019). *Figure 3* gives a historical account of the main milestones for the green and circular transition that Ecuador has undertaken in the last eight years as part of the national public policy in conjunction with various private actors.

Finally, the main policy instrument on CE in the country is the Circular Economy National Strategy and Action Plan (White Paper) based on four fundamental axes: i)

[3] "Right to the full respect of its existence and the maintenance and regeneration of its vital cycles, structure, functions and evolutionary processes"

Sustainable production; ii) Responsible consumption; iii) Integrated Waste Management; and iv) Policies and Financing (*Ministry of Production*, 2021). The White Paper aligns the CE concept with Ecuador's 2030 Agenda and the corresponding National Development Plan. This action plan pinpoints the most relevant legal mechanisms to support a CE strategy and identifies five priority sectors (manufacturing, agriculture, commerce, construction, and oil & mining) for the CE transition.

Figure 3. Milestones for the green and circular transition in Ecuador



Source: EEAS (2021)

Importance of circular economy in both countries

Brazil

Brazil is the wealthiest country in terms of biodiversity and freshwater quantity; it's the 5th biggest country in the world in terms of territory, the 6th most populated, and the 9th in terms of inequality (*Faria et al.*, 2023). According to the Institute of Applied Economic Research (IPEA), in Brazil, each year, more than R$ 8 billion reais (Brazilian currency) in different materials are disposed to landfills and dumps instead of being recycled. This scenario must be reversed with the adoption of the circular economy.

The circular economy makes processes more profitable and seeks to restore physical and regenerative resources as natural functions, bringing more significant opportunities to all. There is also a need to organize a structure that punishes or corrects linear logic and, at the same time, rewards the circular economy (*De Assunção*, 2019). This premise must be, for example, in the laws and regulations of the countries regarding the environment and business management, with incentives for organizations that propose to turn the key and adopt the cyclical model.

Rendering to the report, there are initiatives in Brazil that show the country's commitment to promoting habits and consumption that are more in line with sustainable development. The joint guidelines of public and private entities are motivating the movement towards a circular economy scenario, albeit at a relatively slow pace (*Cosenza et al.*, 2020).

According to a survey carried out in 2019 by the National Confederation of Industry (CNI), in collaboration with Brazilian industry associations, more than three quarters of all industries in Brazil which represents 76.4% of the total, are adopting circular economy practices in one way or another, but most of them are not aware that their initiatives are in line with this concept (*Valavanidis*, 2018).

Despite the lack of detailed information on the adoption and importance of the circular economy in its broadest sense, some evidence is available in Brazil on its main components: recycling and reverse logistics, i.e. post-consumer activities that allow the re-use of waste collected in the production (*De Melo Faria*, 2018).

From the literature review, there are a number of companies in the country that are applying certain circular economy concepts and policies.

One of them is Natura, Brazil's largest multinational cosmetics company, which uses different seeds from local trees to produce its cosmetics. This also helps to conserve the Amazon's diversity by saving species, providing food and shelter for local animals, and encouraging the local community to preserve their trees as a new source of income. Their biotechnological process combines the intelligence of the indigenous communities of the Amazon ('bio-intelligence') with the latest in gene and protein science (*Ellen MacArthur Foundation*, 2017).

Another important example is Nespresso which is an operating unit of the Nestlé Group. The company has invested around US$ 36 million in Brazil since 2005. The company is famous for coffee machines and other beverages, the brand created its own solution for reusing aluminium capsules, investing millions of reais in initiatives such as the Nespresso Recycling Center (*Nespresso*, 2022). According to a report on Época's website, in 2019, the company collected 22% of the capsules sold through a system mobilized by electric cars in the capitals of São Paulo and Rio de Janeiro. While aluminium is recycled repeatedly, coffee grounds are turned into compost.

In the beverage sector, the gigant Coca-Cola and its branch in Brazil FEMSA has several local initiatives favouring the circular economy, such as reusing glass bottles. In 2019, the Coca-Cola bottler celebrated the recycling of 100 million PET bottles in one year through the SustentaPET collection center. The site works in partnership with recyclable material collectors and cooperatives, strengthening their performance and collaborating for the correct disposal of waste (*Ellen MacArthur Foundation*, 2017).

In 2018, the Brazilian Electrical and Electronic Industry Association (ABINEE) promoted reverse logistics in batteries and electrical/electronic products as the main circular economy environmental initiative (*De Melo Faria*, 2018).

In the case of the Brazilian Association of Textile and Clothing Industry (ABIT), they include adopting circular business models as an environmental trend in the sector, which aims to move towards a circular economy. The underlying concept is the creation of new materials that can be more easily recycled and reused, have lower water and energy consumption in their manufacturing process and are biodegradable (*De Melo Faria*, 2018).

Ecuador

Ecuador is a country of great natural riches and a growing economy, facing the challenges of the intensification of industrial activity and changing consumption patterns. As a diagnosis made by the *Ministry of Production* (2021), remarks several socioeconomic factors of the country.

- Currently, economic growth depends on the extraction and use of energy resources at a high socio-environmental cost.
- Only 6% of the produced waste is recycled nationwide.
- From 1990 to 2015, there has been a 144% increase in the use of materials and a 181% increase in health damages due to air pollution.
- Official data show a 16.6% reduction in land use for forestry and agricultural activities in the same period mentioned above.

Considering the reality of the country, in recent years, Ecuador has applied a series of public initiatives to lay the foundations for the implementation of the Circular Economy. This effort has been possible with the support and participation of the state, governments, and social actors such as companies, civil associations, and universities, which have understood the need to combat environmental degradation and reduce poverty rates in the country (*Ridaura*, 2020).

The mapping of actors done by *Ministry of Production* (2021), identified 831 organizations that should be involved in the circular economy in the country, to which a survey was applied. Among the results, 47% of these participating organizations indicated that they already have circular economy strategies. The case study conducted by *Garabiza et al.* (2021), shows a fraction of the private companies in Ecuador that apply CE and the type of circular strategies they currently apply (*Table 3*).

Table 3. Companies that apply circular economy in Ecuador

Name of the Company	Activity	CE Initiative
Corporation Favorita	Retail Company	Gira Project
Movistar	Telecommunications	Mobile phone recycling
Arca Continental	Bottling Company	Bottle recycling
Nestle Ecuador	Food Company	Recycling of packaging, efficient use of food
Holcim Ecuador	Cement	Geocycle-Waste co-processing
Unacem Ecuador	Cement	Co-processing of used oils and waste
Tetrapack	Packaging and processing of food processing.	Development of sustainable products, and increased recycling
Small Cooking Oil Companies	Recycled Cooking Oil	Collection of used cooking oil to transform it into biodiesel. into biodiesel.
Incinerox	Steel Production	Integral management of industrial waste.
Ecocaucho	Tire company	Tire reuse.
Tritubot	Recycling of plastic bottles-ECOBLOQ.	Recycling of plastic bottles-ECOBLOQ.

Source: based on *Garabiza et al.* (2021).

In the case of Ecuador, the Circular Economy National Strategy and Action Plan defines the actions to be carried out within the prioritized productive sectors such as Manufacturing, Agriculture, Commerce, Construction, and Oil and Mines (*Ministerio de Producción,* 2021).

DISCUSSION

Our society has achieved a high standard of quality of life compared to historical moments of the past because of the structuring drive of the economic, scientific, and technological development it experienced over the last decades. The industrial sector has been vital in this evolutionary process, especially in adding value to natural resources, turning them into products, and making them available to the consumer market (*National Confederation of Industry*, 2020).

Today we are facing new challenges that make it necessary to improve the quality of life achieved for the world population without causing an environmental imbalance that may pose risks to the world economy. According to the Circular Gap Report, only 8.6% of the 100 billion tons of minerals, fossil fuels, metals, and biomass that enter the economy are reused annually. For this purpose, it will be necessary to rethink the economic model adopted so far; it needs to promote a more sustainable flow of materials in our society and put an end to what we refer to as "trash" by considering every material used in our society as a valuable and reusable "resource" (*Aclima*, 2020).

The operation of nature's cycles inspires us to lay the foundations for transitioning to a model capable of broadly internalizing social and environmental aspects and valuing long-term planning. Public policies are being drawn up in several countries to foster the transition from a linear to a circular logic of thought inspired by nature's cycles (*De Assunção*, 2019). Companies already identify a trend toward consumers valuing products and services that consider social and environmental issues in their design (*National Confederation of Industry*, 2018).

This new logic has the potential to create and/or reinsert new production chains into the economic system through sharing, reuse, maintenance, remanufacturing, and recycling. The concept of circular economy has shown its strength by combining various practices already being worked on, such as Cleaner Production (CP), Industrial Symbiosis, Crade to Cradle (C2C), Functionality Economy, Biomemitism, Design for Environment, Product as a Service, among others.

According to *Azizli* (2021), circular economy is a remarkable sustainable development strategy with great potential to reduce environmental damage, increase material and energy efficiency, create new opportunities for businesses and communities, and is relevant to all types of territories, but it's implemented differently according to local conditions, especially in vulnerable countries like the ones in LAC region.

In this context, various business opportunities can be identified as we rethink the functioning of the economic system and provide access to the formal market to part of the world population that doesn't enjoy the benefits and quality of life that a circular economy can provide. Some lines of action that need to be worked on to

accelerate the transition to the circular economy in Brazil, Ecuador, and most developing countries are:

- Public policy: Tax treatment and regulation suitable; sustainable public procurement; and job generation.
- Education: Broad educational campaigns; and professional training.
- Research, development, and innovation (RD&I): Innovation in the design of products, services, and processes. Development of circularity metrics and partnership between the private sector and academy.
- Financing: Guidance for access to resources and project development; and expansion of financing lines for circular economy.
- Market (business environment): Material in quantity and quality for recycling; cooperation in a competitive environment; and identity of the Brazilian industry as sustainable (*De Assunção*, 2019).

The productive sector is aware of its role in solving the challenges that our society will face in the upcoming decades. Nonetheless, increasing management actions between the private sector, public, and academia will be required to create new forms to produce and consume, remembering that both countries are considered unequal and developing. In this way, it is more challenging to apply CE compared to European and North American countries. However, it is highly needed as it would help improve all three sustainability pillars.

CONCLUSIONS AND FUTURE RECOMMENDATIONS

At the global level, there are various mechanisms and policies that drive the transition from a linear to a circular economy that seeks to meet the triple helicopter of sustainability in the social, economic and environmental spheres. However, developing countries such as Brazil and Ecuador do not yet have specific policy frameworks that encourage the circular economy as a governmental policy.

From the reviewed information you can visualize certain initiatives in both countries related to private companies that have circular economy strategies. In addition, in Brazil there is a regulatory framework related to waste management that has several tools that can be used to drive the circular economy. In the case of Ecuador, although there is no specific policy, the government of the country is pushing for a National CE Plan that is pending approval.

The outstanding challenges and actions in the case of study countries remain large and require the joint effort of all actors involved at the public, private, academic and public care levels in general. Taking the comparative advantages into account these countries have due to their natural resources, their transition to a circular economy could be significantly advanced if international partnerships were added to local efforts.

It is recommended for future research, a quantitative analysis of the impact of current circular economy initiatives that exist in the countries of Latin America and the Caribbean, to visualize the importance of this model in the region.

REFERENCES

Aclima. (2020, January 16). *Circular economy strategies essential as reuse of resources falls to 8.6%*. https://aclima.eus/en/world-risks-disaster-as-global-resource-consumption-passes-100-billion-tonnes-a-year/

Alves, S. C., Gonçalves, F. M., Monterosso, E. P., & Godecke, M. V. (2016). Gerenciamento de Resíduos de Saúde: estudo de caso em estabelecimentos públicos municipais de Pelotas, RS. *Revista Eletrônica Em Gestão, Educação e Tecnologia Ambiental*, *20*(1), 105. https://doi.org/10.5902/2236117019957

Azizli, B. (2021). Circular Economy: An Analysis for Turkey. *Regional and Business Studies*, *13*(2), 31–44. https://doi.org/10.33568/rbs.2915

CEC. (2021). *Circular Economy in Latin America and the Caribbean: a share vision*. Circular Economy Coalition of Latin America and the Caribbean. https://coalicioneconomiacircular.org/wp-content/uploads/2022/02/ENGLISH-Circular-economy-in-Latin-America-and-the-Caribbean.pdf

Celidônio de Campos, M. (2019). *How to develop sustainable business?* CEBRI. https://www.cebri.org/media/documentos/arquivos/MA_EconomiaCircular_Set19_14ou609d33c2a10bf.pdf

Cosenza, J. P., Andrade, E. M. de, & Assunção, G. M. de. (2020). Economia circular como alternativa para o crescimento sustentável brasileiro: análise da Política Nacional de Resíduos Sólidos. *Revista de Gestão Ambiental e Sustentabilidade*, *9*(1), e16147. https://doi.org/10.5585/geas.v9i1.16147

Coste-Maniere, I., Croizet, K., Sette, E., Fanien, A., Guezguez, H., & Lafforgue, H. (2019). 6 - Circular economy: A necessary (r)evolution. In S. S. Muthu (Ed.), *Circular Economy in Textiles and Apparel: Processing, Manufacturing, and Design*. (pp. 123–148). Elsevier. https://doi.org/10.1016/B978-0-08-102630-4.00006-6

De Assunção, G. M. (2019). A gestão ambiental rumo à economia circular: como o Brasil se apresenta nessa discussão. *Sistemas & Gestão*, *14*(2), 223–231. https://doi.org/10.20985/1980-5160.2019.v14n2.1543

De Mattos, C., & de Albuquerque, T. (2018). Enabling Factors and Strategies for the Transition Toward a Circular Economy (CE). *Sustainability*, *10*(12), 4628. https://doi.org/10.3390/su10124628

De Melo Faria, A. (2018). *Reinvenção das formas de negócio universidade federal de uberlândia instituto de economia e relações internacionais*. Universidade Federal de Uberlândia. https://repositorio.ufu.br/bitstream/123456789/23780/1/EconomiaCircularReinven%c3%a7%c3%a3o.pdf

Eboli, F., Groothuis, F., van Kleef, R., Laermann, M., Ulrich Speck. Stefan, & ten Wolde, A. (2021). *Circular taxation reflection paper 2021*. European Circular Economy Stakeholder Platform. https://circulareconomy.europa.eu/platform/sites/default/files/leadership_group_on_economic_incentives_-_circular_taxation_reflection_paper_2021.pdf

Ellen MacArthur Foundation. (2017, November). *Six circular economy case studies from Brazil*. https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

EEAS. (2021b January 21). *Ecuador goes circular: discover the strategy behind*. European External Action Service. https://www.eeas.europa.eu/eeas/ecuador-goes-circular-discover-strategy-behind_en

European Commission. (2021). *Republic of Ecuador: Multi-annual Indicative Programme 2021-2027*. https://international-partnerships.ec.europa.eu/system/files/2022-01/mip-2021-c2021-9114-ecuador-annex_en.pdf

European Parliament. (2023 May 24). *Circular economy: definition, importance and benefits*. https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits.

Fang, W.-T., Hassan, A., & LePage, B. A. (2023). Environmental Literacy In *The Living Environmental Education. Sustainable Development Goals Series*. (pp. 93–126). Springer. https://doi.org/10.1007/978-981-19-4234-1_4

Faria, E., Barreto, C., Caldeira-Pires, A., Streit, J. A. C., & Guarnieri, P. (2023). Brazilian Circular Economy Pilot Project: Integrating Local Stakeholders' Perception and Social Context in Industrial Symbiosis Analyses. *Sustainability*, *15*(4), 3395. https://doi.org/10.3390/su15043395

Garabiza, B. R., Prudente, E. A., & Quinde, K. N. (2021). La aplicación del modelo de economía circular en Ecuador: Estudio de caso. *Espacios*, *42*(02), 222–237. https://doi.org/10.48082/espacios-a21v42n02p17

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, *114*, 11–32. https://doi.org/10.1016/j.jclepro.2015.09.007

Gottinger, A., Ladu, L., & Quitzow, R. (2020). Studying the Transition towards a Circular Bioeconomy—A Systematic Literature Review on Transition Studies and Existing Barriers. *Sustainability*, *12*(21), 8990. https://doi.org/10.3390/su12218990

Green Industry Platform (2015 February). *Governments going circular*. De Groene Zaak Dutch Sustainability Business Association. https://www.greenindustryplatform.org/sites/default/files/downloads/resource/governments-going-circular.pdf

Guénard, M., Armstrong, M., & Horn, O. (2022 February). *City-Level Circular Economy Interventions to Protect and Enhance Biodiversity*. ICLEI. https://circulars.iclei.org/wp-content/uploads/2022/03/Biodiversity-Briefing-Sheet_final.pdf

Haas, W., Krausmann, F., Wiedenhofer, D., & Heinz, M. (2015). How Circular is the Global Economy?: An Assessment of Material Flows, Waste Production, and Recycling in the European Union and the World in 2005. *Journal of Industrial Ecology*, *19*(5), 765–777. https://doi.org/10.1111/jiec.12244

Héry, M., & Malenfer, M. (2020). Development of a circular economy and evolution of working conditions and occupational risks—a strategic foresight study. *European Journal of Futures Research*, *8*(1), 8. https://doi.org/10.1186/s40309-020-00168-7

Hoof, B. Van, Núñez, G., & De Miguel, C. (2023). *Scaling up circular economy initiatives in Latin America and the Caribbean Inclusive and sustainable smart cities (CISI)*. https://repositorio.cepal.org/server/api/core/bitstreams/cd15f230-3122-4b5d-9d8f-b7a72eb5ac2d/content

Iberdrola. (2018). *Megadiverse Countries*. https://www.iberdrola.com/sustainability/megadiverse-countries

IICA. (2018). *Bioeconomy and Production Development Program Conceptual and methodological approaches for technical cooperation*. Inter-American Institute for Cooperation on Agriculture. https://repositorio.iica.int/bitstream/handle/11324/7909/BVE19040201i.pdf

IICA. (2019). *The bioeconomy: a catalyst for the sustainable development of agriculture and rural territories in LAC*. Inter-American Institute for Cooperation on Agriculture. https://repositorio.iica.int/bitstream/handle/11324/12380/BVE20107947i.pdf

Milios, L. (2021). Towards a Circular Economy Taxation Framework: Expectations and Challenges of Implementation. *Circular Economy and Sustainability*, *1*(2), 477–498. https://doi.org/10.1007/s43615-020-00002-z

Ministry of Environment of France. (2016). *Le Ministère de L'environnement et l'ademe soutiennent la lutte contre le gaspillage alimentaire*. https://agriculture.gouv.fr/lutte-contre-le-gaspillage-alimentaire-les-lois-francaises#section-1

Ministry of Production. (2021). *Libro Blanco de Economía Circular de Ecuador*. Ministerio de Producción, Comercio Exterior, Inversiones y Pesca. https://www.produccion.gob.ec/wp-content/uploads/2021/05/Libro-Blanco-final-web_mayo102021.pdf

National Confederation of Industry. (2018). *Circular Economy Opportunities and Challenges for the Brazilian Industry*. https://static.portaldaindustria.com.br/media/filer_public/70/ef/70efcf44-703c-4ce3-bbe6-63647b66e491/circular_economy_opportunities_and_challenges_for_the_brazilian_industry.pdf

National Confederation of Industry. (2020). *Circular Economy Strategic Path for Brazilian Industry*. https://static.portaldaindustria.com.br/media/filer_public/3a/a6/3aa67ad0-4e7c-46c8-8b10-0c6d097f35cf/circular_economy_-_interativo.pdf

Nespresso. (2022). *Circular Economy*. https://www.sustainability.nespresso.com/?categorie=circular-economy

OECD. (2020). The Circular Economy in Cities and Regions. In *OECD Urban Studies*. OECD. https://doi.org/10.1787/10ac6ae4-en

OECD. (2021). *Towards a more resource-efficient and circular economy. The role of the G20*. https://www.oecd.org/environment/waste/OECD-G20-Towards-a-more-Resource-Efficient-and-Circular-Economy.pdf

Ridaura, G. (2020). Economía circular en Ecuador: perspectivas de cumplimiento de los ODS en la era Post COVID-19. *CienciAmérica*, *9*(4), 19–26. https://doi.org/10.33210/ca.v9i4.339

Ritzén, S., & Sandström, G. Ö. (2017). Barriers to the Circular Economy – Integration of Perspectives and Domains. *Procedia CIRP*, *64*, 7–12. https://doi.org/10.1016/j.procir.2017.03.005

Sanches, J. R., Trevisan, A. H., Seles, B. M. R. P., Castro, C. G., Piao, R. S., Rozenfeld, H., & Mascarenhas, J. (2022). Sustainable Circular Economy Strategies: An Analysis of Brazilian Corporate Sustainability Reporting. *Sustainability*, *14*(10), 5808. https://doi.org/10.3390/su14105808

Scheiterle, L., Ulmer, A., Birner, R., & Pyka, A. (2018). From commodity-based value chains to biomass-based value webs: The case of sugarcane in Brazil's bioeconomy. *Journal of Cleaner Production*, *172*, 3851–3863. https://doi.org/10.1016/j.jclepro.2017.05.150

Schröder, P., Albaladejo, M., Ribas, A., Macewen, M., & Tilkanen, J. (2020). *The circular economy in Latin America and the Caribbean Opportunities for building resilience*. Chatham House. https://www.chathamhouse.org/sites/default/files/2020-09-17-circular-economy-lac-Schr%C3%B6der-et-al.pdf

Silva, F. C., Shibao, F. Y., Kruglianskas, I., Barbieri, J. C., & Sinisgalli, P. A. A. (2019). Circular economy: analysis of the implementation of practices in the Brazilian network. *Revista de Gestão*, *26*(1), 39–60. https://doi.org/10.1108/REGE-03-2018-0044

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, *104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Sucozhañay, G., Vidal, I., & Vanegas, P. (2022). Towards a Model for Analysing the Circular Economy in Ecuadorian Companies: A Conceptual Framework. *Sustainability*, *14*(7), 4016. https://doi.org/10.3390/su14074016

UCUENCA. (2021). *Rights of the Nature in Ecuador*. Universidad de Cuenca. https://www2.ucuenca.edu.ec/component/content/article/277-espanol/investigacion/blog-de-ciencia/ano-2021/mayo-2021/2064-leyes-fisicas-y-modelos-basados-en-datos-2

Valavanidis, A. (2018). *Concept and Practice of the Circular Economy Turning goods at the end of their service life into resources, closing loops in industrial ecosystems and minimizing waste*. Science advances on Environment, Toxicology & Ecotoxicology issues. http://chem-tox-ecotox.org/concept-and-practice-of-the-circular-economy/

Vice-Presidency of Ecuador. (2019 August 22). *Pact for the Circular Economy promotes sustainable productive development*. Vicepresidencia de la República del Ecuador. https://www.vicepresidencia.gob.ec/el-pacto-por-la-economia-circular-promueve-un-desarrollo-productivo-sostenible/

Virchow, D., Beuchelt, T. D., Kuhn, A., & Denich, M. (2016). Biomass-Based Value Webs: A Novel Perspective for Emerging Bioeconomies in Sub-Saharan Africa. In F. Gatzweiler, & J. von Braun, (Eds.), *Technological and Institutional Innovations for Marginalized Smallholders in Agricultural Development* (pp. 225–238). Springer International Publishing. https://doi.org/10.1007/978-3-319-25718-1_14

Western Sydney University. (2017). *Literature review purpose*. https://www.westernsydney.edu.au/__data/assets/pdf_file/0006/1254786/Literature_review_purpose.pdf

Corresponding author:

Maria Lourdes ORDONEZ
Hungarian University of Agriculture and Life Sciences
Doctoral School of Economy and Regional Planning
Gödöllő, Páter Károly utca 1., Hungary
e-mail: mordoniez0584@gmail.com

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Customer Employee Exchange and Firm Innovative Behavior Among SMEs in Ghana: The Mediating Role of Customer Knowledge Management

Diyawu Rahman ADAM[1, 2], Sadick Alhaji HUSSEINI[3]
[1]Doctoral School in Management and Organizational Sciences, Hungarian University of Agriculture and Life Sciences, Kaposvár Campus, 7400 Kaposvár, Guba Sándor u. 40. Hungary
[2]Garden City University College,Department of Managerial Sciences, P.O Box KS 12775 Kumasi, Ghana
[3]Corvinus University of Budapest, 1093 Budapest, Fővám tér 8. Hungary

ABSTRACT

The study sought to examine the relationship between customer-employee exchange and firm innovative behaviour (FIB). The mediation effect of customer knowledge management in the relationship between customer-employee exchange and FIB was determined. Quantitative data was collected using a structured questionnaire. We sampled 247 respondents from Small and Medium Enterprises (SMEs) in Ghana using the simple random sampling technique. The partial least squares structural equation modelling (PLS-SEM) was assessed using the Smart-PLS. The findings of the study suggest that the variables representing customer-employee exchange (solidarity, harmonization, and information exchange) have had an important effect on FIB. Moreover, customer knowledge management is found to mediate relationships between customer-employee exchange and firm innovative behaviour. The study recommends that due to their limited resources compared to larger companies' new ways of interactions between SMEs and customers should be introduced and enhanced as that will help the firms to improve their innovative behaviour.
Keywords: firm innovative behaviour, customer employee exchange, solidarity, harmonization, information exchange
JEL codes:M31, Z33

INTRODUCTION

Firm innovative behaviour (FIB) serves as the building blocks for organizational innovation and is crucial to corporate success, particularly for service-based businesses. Although these creative actions are taken on an individual basis, employees nevertheless need to interact frequently with clients. Customer-employee exchange (CEX) has an impact on staff members' innovative behaviour in the service industry (*Li & Hsu,* 2016). Innovation is essential for any business's success in creating, disseminating, and implementing new ideas that can improve organizational performance and result in positive organizational performance (*Imran & Akhtar*, 2022).

Lee and Trimi (2018) contend that innovation is vital for any business organization to survive and achieve its long-term goals. It is generally seen as one of the most crucial factors that help firms to attain long-term success (*Hall et al.*, 2005). Given that macroeconomic uncertainties could derail the success of firms in their respective industries, *Guan et al.* (2021) indicate that those uncertainties encourage innovative activities. Exploring the determinants of firm innovation is vital, as it plays an important role in increasing product competitiveness and promoting economic growth.

Furthermore, although the impact of customer-employee exchange on firm performance, including elements of customer satisfaction, loyalty, and financial outcomes, has been extensively studied in the literature, there is still a sizable research gap in understanding the complex relationship between customer-employee exchange and firm innovative behavior, particularly in the context of Small and Medium Enterprises (SMEs) in Ghana. Additionally, customer knowledge management has the potential mediating function in this relationship and has relatively received little attention. There is a chance for a thorough examination and empirical analysis given this research gap. In Ghana, and other emerging economies, SMEs are recognized for having resource limitations, which may influence the dynamics of the relationships between customers and employees and their consequences on innovation (*Ahinful et al.*, 2023; *Adom et al.,* 2022). Therefore, it is important to understand how employee-customer interaction affects innovation in that setting, taking knowledge acquisition into consideration.

This study believes that firms' innovative behavior can be achieved if they have the right interactive atmosphere with their customers. Thus customer-employee exchange is said to have an influence on firm innovative behavior. Exploring the determinants of firm innovative behaviour is important in increasing product competitiveness as well as promoting economic growth (*Liu & Li,* 2020). The objective of the study is therefore to determine the effect of customer-employee exchange (solidarity, harmonization, and information exchange) on firm innovative behavior. Furthermore, the study seeks to understand the mediating role of customer knowledge management on the relationship between customer-employee exchange and firm innovative behavior. It is believed that through learning and innovation processes, firms can achieve competitive advantages, which ultimately lead to the enhancement of firm performance.

Customer-Employee Exchange

One of the constructs under consideration in this study is the customer-employee exchange. It represents the interactions that ensue between customers and employees during or after service delivery. Customer-employee interactions also occur when customers communicate with a firm to obtain more information about the product/service (*Bowman & Narayandas,* 2001). It serves as a crucial component of services (*Li & Hsu*, 2016). It improves consumers' service interactions, which would raise their level of happiness (*Namasivayam & Mattila,* 2007). In this way, it can be argued that customer and employee interactions are vital for business progress. Besides, customers are becoming more involved in services and working

with staff, yet their interactions with employees differ from those with their superiors and other employees (*Solnet,* 2007). Employees may service clients whose demands change frequently, in contrast to bosses and co-workers. This could serve as an important platform for knowledge acquisition. Through this, employees are able to understand behavioural patterns of customers and improve customization.

Customers in their interactions with employees also stand to gain knowledge about employees. Employee behaviour tends to give the customer a clue about service delivery processes. Employees may behave differently when in contact with customers when compared to leaders or co-workers (*Sierra & McQuitty,* 2005), but consumers get the opportunity to collect information from firms by observing the service employees' attitudes and behaviors (*Wang & Lang*, 2019). The interactions between employees and customers for the duration of the service experience may help customers develop social identity with the firm and could further develop into an important long-term customer loyalty (*Wang & Lang*, 2019). Interactions serve as a key information point where customers use to evaluate the relevance of the service. Whilst the general understanding is the gain firms obtain from these interactions, *Joshi & Sharma*, (2004) contend that customers through these interactions gain important knowledge and experience about firms. Thus, a longer period of customer-employee interactions may intensify mutual understanding (*Biesanz et al.*, 2007).

According to *Keith et al.* (2004) customer-employee exchange includes solidarity, harmonization and information exchange. Solidarity in their study was explained to refer to situation where exchange is considered to be important and ongoing, which suggests that employees and customers alike expect the relationship to continue (*Keith et al.*,2004). Harmonization explains the trust existing between the parties to the exchange and their resolve to solve conflict. Information exchange also refers to the information content in the exchanges (*Li & Hsu*,2016; *Keith et al.*, 2004). This study adopts the categorization of customer-employee exchange advanced by *Keith et al.* (2004).

Customer Knowledge Management (CKM)

Zhan et al., (2019) defined customer knowledge management as the management of the procedure an organization uses to acquire, store and analyze data related to customers. *Gebert et al.*(2002) argue that customer knowledge is inherently found in the values experiences and perceptions of the firm's relationship with its customers. It is concerned with the management and exploitation of corporate knowledge. This knowledge includes both explicit knowledge and other archived and implied knowledge that is held in employees' minds and are embedded in the fulfillment of their job (*Rowley*, 2002). According to *Taherparvar et al.* (2014) CKM efficiently manages knowledge from the viewpoint of the consumer and offers crucial sources for innovative ideas. To meet the wants and challenges of customers, they can be used to create new products, services, and solutions (*Belkahla & Triki*, 2011). It also encourages the sharing of customer knowledge both within a company and between clients and businesses. Therefore, it is vital to make customer information accessible,

develop it, and communicate it systematically if it is to be used in a target-oriented way. Customers can participate actively as knowledge partners with the business by implementing CKM. *Kakhki et al.* (2021) postulate that customer knowledge management is seen as a managerial strategy which provides support for the relationship between an organization and its customers. CKM allows a competent mutual engagement between customers and organization when customer knowledge is set in motion in the organization (*Kakhki et al.*, 2021). It frequently becomes ingrained in organizational routines, processes, practices and conventions in addition to documents or repositories.

Furthermore, customer knowledge has been categorized as knowledge about, knowledge from, and knowledge for the consumer (*Wilde*,2011; *Khosravi et al.*,2017). Knowledge about the customer is customer-oriented knowledge and includes details about the customer's purchasing and payment habits, as well as his motivations, preferences, and needs. This type of knowledge is primarily learned passively, or without actively engaging the customer. It is the outcome of investigations, discussions, and observations made, for instance, by market research organizations (*Khosravi et al.,* 2017). With knowledge from customer the majority of customer knowledge comes directly from the business. Consumers provide the company with information during their interactions with them; services, and procedures as well as their expectations. This area of information also includes market analyses, consumer knowledge about their rivals or technology, and solution suggestions (*Khosravi et al.*, 2017). With knowledge for the consumer, customers share their information with another business and that business is better able to spot any potential knowledge gaps and expand on the consumer's "non-knowledge" (*Khosravi et al.*, 2017).

Firm innovation

Firm innovation is well thought-out to be a critical factor among SMEs whose aim is to provide superior value propositions to the markets. Firm innovativeness is the ability of an organization to engage in new ideas and concepts that may lead to the adoption of new procedures or the launch of new goods (*Zastempowski*, 2022). Thus, rather than focusing on the actual act of implementing and introducing ideas, firm innovativeness captures an organization's capacity to innovate in its entirety (*Hügel,* 2019). According to *Rubera & Kirca*(2012), the innovativeness of a company is seen as a key asset and has been the focus of much research on innovation. Additionally, the variety and inconsistency found in the literature show that there is no single coherent measurement model, common concept, or widely accepted definition of the phenomenon (*Pallas et al.*, 2013). Nevertheless, we suggest that firm innovation represents the capacity that a firm possesses in its quest to find new ways of doing business. This could be new product development or new service process. Firm innovative capacity could be said to be an important driver for economic development. As a result, firms endeavor to understand customers by acquiring market information in order to anticipate changes in customer needs and attitudes (*Thoumrungroje & Racela*, 2022).

According to *Lv & Xiong* (2023) the existing literature on innovation has developed into two proxies: Research and Development (R&D) and patenting. The authors argued that patenting activity is considered a better proxy as it seeks to measure innovation output while at the same time captures how effective a firm utilizes its innovation input. Firms that are innovative are likely going to possess higher efficiency, productivity and boost their market power (*Aghion et al.*, 2014). Innovation could be said to be undertaken in different contexts with importance placed on creative methods. Creative methods can come in different ways; customer complaint handling, packaging, new production methods, new product development and to mention just a few. Being receptive to customer complaints via customer-response capability helps firms develop innovations that enhance customer value (*Thoumrungroje & Racela*, 2022). In a study by *Monteiro et al.* (2020) it was postulated that innovation serves as the source of a firm's competitive advantage and that marketing innovation is seen to be an important aspect of innovation.

Knowledge-Based View (KBV)

This study recognises the importance of knowledge for business organizations. This calls for the need to understand the concept of the knowledge-based view of the firm. The knowledge-based view (KBV) of the firm was proposed in the early 1990s because of the convergence of several research streams (*Al-Shammari,* 2009). The RBV of the company, epistemology, and organizational learning are some of these streams (*Grant*, 2002). The emphasis of the global economy now is on intellectual resources rather than physical ones. The majority of intellectual resources consist of know-how, know-why, experience, and knowledge that typically resides in the minds of one or a small number of employees, even though some intellectual resources, such as patents, intellectual property, etc., are more apparent than others (*Klein,* 1998). According to *Pereira & Bamel* (2021) the knowledge-based view (KBV) offers an important "rationale for considering knowledge as a strategic resource". Research indicates that issues regarding the timely absorption of knowledge (*Martínez-Sanchez et al.*, 2020) its transferability (*Bacon et al.*, 2020) and use (*Lee et al.,* 2021) serve as important elements for a firm to stay in business (*Fernandes et al.*,2022).

According to *Davenport & Prusak* (1998), a firm's only sustainable competitive advantage (SCA) often results from what it already knows, how rapidly it picks up new knowledge, how well it uses what it already knows, and how quickly it applies new knowledge (*Sawhney & Prandelli*, 2000). Competitive advantage or positioning in the KBV of a company could be said to be produced through knowledge-intensive competencies that optimize value-adding customer offerings. Many businesses in recent times are compelled to develop new methods of employing the knowledge acquired in creating or upgrading their business processes as a result of the knowledge's rising domination as a foundation for organizational efficiency and effectiveness. The importance of knowledge acquisition in the modern marketing environment cannot be discounted as it provides an avenue for creating a competitive advantage for long term success.

Following the review of the extant literature, the hypothesis of the study is provided in *Table 1* below.

Table 1: Hypothesis

H1	Solidarity has a significant effect on firm innovative behavior
H2	Harmonization has a significant effect on firm innovative behavior
H3	Information exchange has a significant effect on firm innovative behavior
H4	Customer knowledge management has a mediating role on the relationship between solidarity and Firm innovative behavior
H5	Customer Knowledge Management has a mediating role on the relationship between harmonization and firm innovative behavior
H6	Customer Knowledge Management has a mediating role on the relationship between information exchange and firm innovative behavior.

MATERIAL AND METHOD

Study context

Ghana is a country located in the West African sub-region (or sub-Sahara Africa). It has a population of about 30.8 million (*Ghana Statistical Service*, 2023). According to *Asare* (2014) Small and Medium enterprises in Ghana developed during the pre-colonial time, where the middle class was trained to take over the businesses of European merchants. At that time the population was about 6 million. Nevertheless, the intent was met with several problems, especially during the era of the first president of Ghana in the early 60's who saw the rise of the private sector as a political threat, and therefore formulated policies to discourage such in order to promote the public sector. However, a major setback in the 1980's in a large-scale manufacturing firm forced the formal sector workers to seek a secondary source, hence the springing up of Small and Medium-sized Enterprises (*Asare*, 2014). Subsequently, the Government of Ghana had to enact some policies in order to give confidence to the setting up of SME's

SMEs represent an important backbone of developing economies. Regardless of a country's degree of development, small and medium-sized enterprises (SMEs) are significant contributors to economic growth and development. In most of Africa, small and medium-sized businesses (SMEs) represent the backbone of the economy, and Ghana is no exception. According to information available from the Registrar General's Department (Ghana), a little over 90% of companies registered in Ghana fall within the SME category (*Mensah*, 2004). Since they represent a significant source of income and jobs, SMEs have been recognized as the driving force behind the nation's economic growth and development. In Ghana SMEs provide about 85 percent of manufacturing employment and contributes 70 percent to the national GDP (*Asare*, 2014). This is in line with the suggestions made by *OECD* (1997) that SMEs play a vital role on the economic growth and development, employment and income of a country.

Methodology

Data was mainly collected using the questionnaire as an instrument. The questionnaire was divided into two (2) main sections. The aim of the first section was to collect demographic data of the respondents (and the enterprise). Information gathered from this section included gender, age, position in the company, sector the company operates and number of full time employees. The second section enabled the researchers collect information regarding the constructs (closed-ended questions). The section was further divided into the constructs of interest i.e. customer-employee exchange (solidarity, harmonization and information exchange), customer knowledge management and firm innovative behavior.

We conducted a survey to gather empirical data on SMEs in Ghana. The data for this study was collected on quantitative research methods. The researchers adopted the survey method as the preferred technique. The questions were therefore structured. The measurement instrument was developed and measured using the PLS-SEM measurement model based on theoretical models. The structural model of PLS-SEM was used to test our model and hypotheses as suggested by *Valaei et al.* (2017). The measurement model was determined. Its quality was dependent on validity and reliability based on these values: Cronbach's alpha (> 0.60), composite reliability (>0.70), average variance extracted (AVE) (> 0.50).

The independent variable for the study; customer-employee exchange was adopted from the work of *Keith et al.* (2004). Their work further conceptualized customer-employee exchange into solidarity, harmonization and information exchange. The mediator (customer knowledge management) and the dependent variable (firm innovative behavior) were adapted from the extant literature. Data from SMEs in Ghana (n=247) was ultimately used for the data analysis. A five-point Likert-type scale ranging from "strongly disagree" to "strongly agree" applied on 25 items.

RESULTS AND DISCUSSION

Demographic information

In *Table 2* the demographic information of the respondents (those who answered the questions on behalf of the firm) are indicated. It shows that *147* representing *59.5%* are males, whereas *100,* representing *40.5%* are females. Most of them are frontline employees (*54.25%*)*,* with the rest in that order; CEO (*9.7%*)*,* Manager (*17%*) while others are at *19%*. There were *56.68%* of the sample who are from the 20-29 age category, whilst the rest being *30-39* (*30.7%*), *40-49* (*8.9%*) and *50* above (*19%*). The firms operate in different sectors of the economy. The majority (*21%*) are from the wholesaling or retailing. The rest follow in this order; Health (*13.7%*)*,* manufacturing (*13.36%*), service providers (*19.8%*), financial service (*8.5%*)*,* Agriculture (*5.2%*), hospitality (*4.453%*), extraction (*2.4%*)*,* and others (19.8%). The firms further indicated the number of their full-time employees, with *55%* having up to *20* employees, *36.4%* (between *21* and *50*) and *8.1%* having between *51* and *100* employees.

Table 2: Demographic information

Demographic Information	Categories	Frequency	Percent
Gender	Male	147	59.514
	Female	100	40.5
Age Group	20-29	140	56.68
	30-39	76	30.769
	40-49	22	8.907
	50 or More	9	3.6
Position in the Company	Ceo	24	9.717
	Manager	42	17.004
	Frontline Employee	134	54.251
	Other	47	19
Sector the Company Operate	Manufacturing	33	13.36
	Wholesaling/Retailing	52	21.053
	Agriculture and Agri-Business	13	5.263
	Hospitality	11	4.453
	Financial Service	21	8.502
	Health Facility/Service	34	13.765
	Extraction, Drilling &Mining	6	2.429
	Service Provider	49	19.8
	Other	28	11.336
Number of Full-Time Employees in the Company	1-20	137	55.466
	21-50	90	36.437
	51-100	20	8.1

Common Method Bias (CMB)

To assess the presence of common method bias (CMB), the study employed two measures: the hetero trait – mono trait ratio of correlations (HTMT) and the inner variance inflation factor (VIF). *Nitzl* (2016) suggests that CMB exists if the primary constructs exhibit significant correlations (r >*0.90*). However, in the current study, all correlation values among the constructs, as presented in the HTMT table, are below *0.90*. The highest correlation value observed is *0.597*, indicating an absence of CMB. An alternative approach to identify CMB is by examining the inner VIF values. A VIF value exceeding 3.30 implies the potential contamination of the model by CMB. In our study, the highest VIF value obtained is *1.306*, as indicated in the structural model assessment table. This value is significantly below the threshold of 3.30 established by *Kock* (2015) and *Adedeji et al.* (2020), further confirming the absence of CMB. Consequently, the results of this study suggest that CMB is not a significant concern, and the findings can be interpreted with confidence.

Table 2 displays the descriptive statistics of the constructs, along with their inter-correlations, providing valuable insights into the relationships between the variables.

Notably, all of the constructs exhibit significant correlations with firm innovative behaviour (FIB), highlighting their relevance in contributing to FIB. Among the constructs, it is worth noting that harmony (HAR) has the lowest mean value of *3.894,* indicating relatively lower levels compared to the other factors. Conversely, solidarity (SOL) demonstrates the highest mean value of *4.009*, indicating its comparatively greater influence. These findings emphasize the importance of considering these constructs as crucial factors when formulating strategies aimed at enhancing FIB. In summary, the results from *Table 3* underscore the significance of the examined constructs in relation to FIB and underscore the need for incorporating them into the development of strategies designed to improve FIB.

Table 3: Means, Standard Deviation, and Correlations of the Study Variables

Variables	Mean	SD	Gender	Age	Posi.	sector	NOE	SOL	HAR	IE	CKM	FIB
Gender	1.402	0.491	1									
Age	1.585	0.787	-0.084	1								
Position	2.829	0.864	0.105	0.076	1							
sector	4.881	2.851	0.12	.275**	.361**	1						
NOE	1.52	0.637	-0.059	0.106	0.043	0.066	1					
SOL	4.009	0.772	-0.096	0.079	-.136*	-0.114	-0.066	1				
HAR	3.894	0.351	-0.013	-0.062	0.078	-0.038	-0.049	-0.086	1			
IE	3.983	0.612	0.023	-0.094	-0.063	-0.022	-0.034	0.031	-0.072	1		
CKM	3.997	0.632	-0.084	-0.109	0.022	-0.082	0.049	.207**	.279**	.251**	1	
FIB	3.896	0.81	-0.041	-.191**	0.014	-0.072	0.006	.186**	.298**	.247**	.514**	1

Notes: n = 384, * p <0.05, ** p <0.01(2-tailed), CA are reported in the parentheses on the diagonal, NOE: Number of employees

Data Analysis and Measurement Model Assessment through Smart-PLS

The initial phase of the analysis involved an examination of several critical aspects, including common method bias (CMB), missing data, outliers, data normality, and variable correlations. Once the data passed the necessary checks and was deemed suitable, a measurement model was developed using Smart-PLS software 4.0. This model aimed to evaluate the reliability, validity, convergent validity, discriminant validity, and internal consistency of the constructs under investigation, following the guidelines of *Hair et al.* (2017) and *Ringle et al.* (2015). Subsequently, the focus shifted to the assessment of the proposed hypotheses within the structural model. This step involved analyzing the relationships between the constructs and examining the overall model fit and significance of the paths, as recommended by the aforementioned scholars. By following this systematic approach, the study ensured a rigorous evaluation of the data, construct measurement, and the relationships proposed in the model, establishing a robust foundation for drawing meaningful conclusions from the analysis.

In the measurement model, the PLS-algorithm was employed to assess the factor loadings of all the items. The obtained factor loadings ranged from *0.665* to *0.931*, satisfying the recommended cut-off values proposed by *Hulland* (1999). This indicates a strong association between the items and their respective constructs.

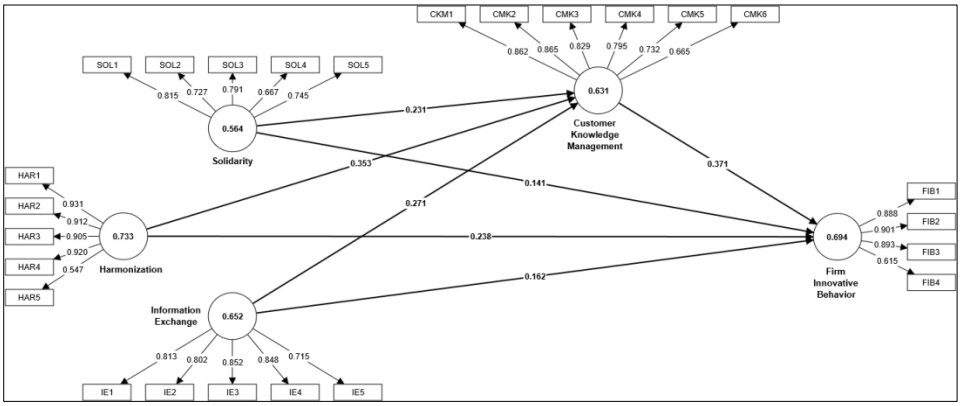
Convergent validity was evaluated by examining the Average Variance Extracted (AVE) values. All AVE values exceeded the threshold of *0.5* (*50%*), as suggested by *Hair et al.* (2017). This suggests that a significant proportion of the variance in the items is accounted for by their corresponding constructs, further supporting convergent validity. To ensure internal consistency, Cronbach's Alpha and composite reliability values were calculated. Both values surpassed the recommended threshold of *0.70*, as advocated by *Hair et al.* (2017). *Table 4* and *Figure1*corroborated these results, which provide an overview of the measurement model and its statistical indicators. With internal consistency and convergent validity confirmed, the next step involved assessing discriminant validity.

Table 4: Constructs validity and reliability

Constructs	Items	F.L	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CKM	CKM1	0.862	0.881	0.884	0.911	0.631
	CMK2	0.865				
	CMK3	0.829				
	CMK4	0.795				
	CMK5	0.732				
	CMK6	0.665				
FIB	FIB1	0.888	0.845	0.873	0.899	0.694
	FIB2	0.901				
	FIB3	0.893				
	FIB4	0.615				
HAR	HAR1	0.931	0.905	0.95	0.93	0.733
	HAR2	0.912				
	HAR3	0.905				
	HAR4	0.92				
	HAR5	0.547				
Information Exchange	IE1	0.813	0.868	0.888	0.903	0.652
	IE2	0.802				
	IE3	0.852				
	IE4	0.848				
	IE5	0.715				
Solidarity	SOL1	0.815	0.81	0.844	0.866	0.564
	SOL2	0.727				
	SOL3	0.791				
	SOL4	0.667				
	SOL5	0.745				

Notes: CR: Composite Reliability; AVE: Average Variance Extracted; CA: Cronbach's Alpha

Figure 1: Measurement model with outer loadings and AVE values from PLS-Algorithm



To confirm the discriminant validity, we used two methods: Fornell Larcker and Hetero trait and Mono trait (HTMT) Ratio. The Fornell Larcker results are presented in *Table 5*, which confirms the discriminant validity. The diagonal cells show the square root of AVE, which is higher than the correlation values below them (*Fornell & Larcker*, 1981). This confirms the discriminant validity of all the constructs.

We also used the HTMT ratio to confirm discriminant validity. All the correlation values among the constructs were less than 0.9 as recommended by *Hair et al.* (2017), confirming the discriminant validity of all the constructs. The HTMT results for checking the discriminant validity can be found in *Table 6*.

Table 5: Discriminant validity – Fornell Larcker

Constructs	CKM	FIB	Harmonization	Information Exchange	Solidarity
CKM	0.795				
FIB	0.521	0.833			
Harmonization	0.32	0.336	0.856		
Inf. Exchange	0.261	0.252	-0.059	0.807	
Solidarity	0.219	0.213	-0.075	0.051	0.751

Notes: The square root of AVEs are higher than the inter-correlation values.

Table 6: Discriminant validity

Constructs	CKM	FIB	Harmonization	Information Exchange	Solidarity
CKM					
FIB	0.597				
Harmonization	0.344	0.373			
Inf. Exchange	0.29	0.289	0.073		
Solidarity	0.255	0.252	0.106	0.09	

Assessment of the Structural Model

In the evaluation of the structural model, we performed various assessments to ensure its reliability and predictive capabilities. Firstly, we examined the inner Variance Inflation Factor (VIF) values to identify any potential collinearity issues. The analysis revealed that the highest VIF value observed was 1.306, which is below the commonly accepted threshold of 5 (*Hair et al.*, 2017). This finding confirms that collinearity was not a significant concern in our model, enhancing the reliability of the estimated relationships between the variables.

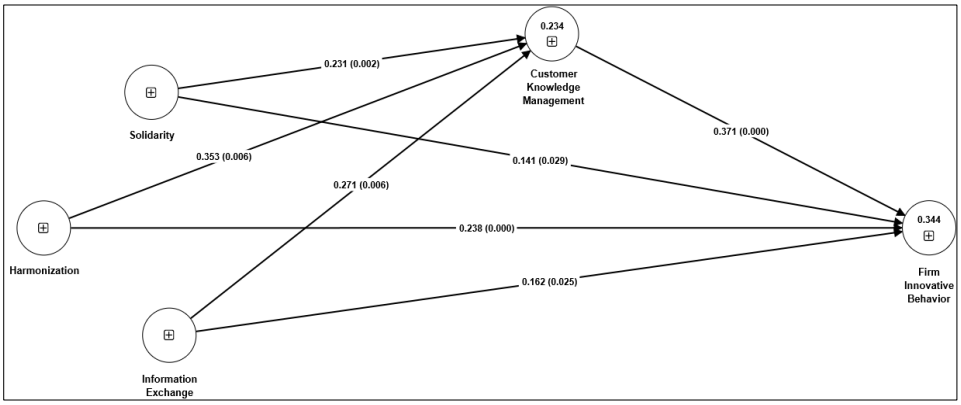
Additionally, we assessed the coefficient of determination (R2), effect size (F2), and predictive relevance (Q2) to gauge the model's performance. These metrics are crucial in determining the explanatory power and predictive capability of the model. We compared the obtained values against the threshold criteria, as presented in *Table 7* and *Figure 2*. The results indicated that our model achieved favorable R2, F2, and Q2 values, meeting or exceeding the predefined thresholds. This suggests that our model possesses good explanatory power and is a reliable predictor of the outcome variable.

Table 7: Assessment of the structural model

<table>
<tr><td rowspan="3">R-Square</td><td>Endogenous</td><td rowspan="2">R Square</td><td>R Square</td><td rowspan="3">0.26: Substantial,
0.13: Moderate,
0.02: Weak
(Cohen, 1988)</td></tr>
<tr><td>Variables</td><td>Ad-justed</td></tr>
<tr><td>CKM</td><td>0.234</td><td>0.225</td></tr>
<tr><td>FIB</td><td>0.344</td><td>0.333</td><td></td></tr>
<tr><td rowspan="6">Effect Size (F-Square)</td><td>Exogenous</td><td rowspan="2">EA</td><td rowspan="2">EPMT</td><td rowspan="6">0.35: Substantial,
0.15: Medium effect,
0.02: Weak effect
(Cohen, 1988)</td></tr>
<tr><td>Variables</td></tr>
<tr><td>CKM</td><td></td><td>0.161</td></tr>
<tr><td>Harmonization</td><td>0.162</td><td>0.073</td></tr>
<tr><td>Information Exchange</td><td>0.095</td><td>0.036</td></tr>
<tr><td>Solidarity</td><td>0.069</td><td>0.028</td></tr>
<tr><td rowspan="6">Collinearity (Inner VIF)</td><td>Exogenous</td><td rowspan="2">EA</td><td rowspan="2">EPMT</td><td rowspan="6">VIF <= 5.0
(Hair et al., 2017)</td></tr>
<tr><td>Variables</td></tr>
<tr><td>CKM</td><td></td><td>1.306</td></tr>
<tr><td>Harmonization</td><td>1.009</td><td>1.172</td></tr>
<tr><td>Information Exchange</td><td>1.006</td><td>1.101</td></tr>
<tr><td>Solidarity</td><td>1.008</td><td>1.078</td></tr>
<tr><td rowspan="4">Predictive Relevance (Q-Square)</td><td>Endogenous</td><td rowspan="2">CCR</td><td rowspan="2">CCC</td><td rowspan="4">Value higher than 0 indicates Predictive Relevance
(Stone, 1974; Geisser, 1975)</td></tr>
<tr><td>Variables</td></tr>
<tr><td>CKM</td><td>0.138</td><td>0.477</td></tr>
<tr><td>FIB</td><td>0.222</td><td>0.495</td></tr>
</table>

Notes: CCC: Construct Cross-validated Communality, CCR: Construct Cross-validated Redundancy

Figure 2: Structural model with inner model t-values



Following a robust analysis, the proposed hypotheses were evaluated through a 5000-resample bootstrapping procedure conducted in Smart-PLS. The results are presented in *Table 8*, providing insights into the relationships between the variables. The findings support the first hypothesis (H1) concerning the relationship between Solidarity and FIB. The analysis revealed a significant association ($p = 0.029$, $t = 2.186$) with a positive effect ($\beta = 0.141$). This suggests that Solidarity has a favorable impact on FIB. Similarly, the second hypothesis (H2) regarding the relationship between Harmonization and FIB yielded significant results ($p = 0.000$, $t = 3.634$) with a positive effect ($\beta = 0.238$). This indicates that Harmonization significantly influences FIB in a positive manner. Furthermore, the third hypothesis (H3) pertaining to the relationship between Information exchange (IE) and FIB also demonstrated significance ($p = 0.025$, $t = 2.238$) with a positive effect ($\beta = 0.162$). This suggests that Information Exchange has a noteworthy positive impact on FIB. These significant findings provide empirical evidence supporting the hypothesized relationships between the constructs, reinforcing the theoretical framework of the study. The inclusion of the p-values, t-values, and effect sizes (β) enhances the clarity and comprehensibility of the results, contributing to the overall robustness and validity of the research outcomes.

Table 8: Hypothesis testing result

Hypotheses	OS/ Beta	SM	SD	95% C.I. Bias Corrected		T	P	Decision
				LL	UL			
H1: Solidarity -> FIB	0.141	0.146	0.065	0.014	0.264	2.186	0.029	Supported
H2: Harmonization -> FIB	0.238	0.227	0.065	0.113	0.371	3.634	0	Supported
H3: I. Exchange -> FIB	0.162	0.161	0.072	0.01	0.296	2.238	0.025	Supported

Notes: OS: Original Sample; LL: Lower Limit; UL: Upper Limit; Significant; *p < 0.05

The analysis of the fourth hypothesis (H4) examined the mediation role of CKM in the relationship between Solidarity and FIB. The results indicate that this hypothesis was found to be significant, with a p-value of 0.019 and a t-value of 2.348. Furthermore, the lower limit (LL) value of 0.024 and the upper limit (UL) value of 0.161 demonstrate a non-zero range, providing additional evidence of significant mediation. It is worth noting that the mediation in this case is partial, as the direct relationship between Solidarity and FIB was also found to be significant. Similarly, the fifth hypothesis (H5) explored the mediation role of CKM in the relationship between Harmonization and FIB. The analysis reveals that this hypothesis was found to be significant, with a p-value of 0.037 and a t-value of 2.081. The LL value of 0.022 and the UL value of 0.264 further confirm the presence of significant mediation. Similar to H4, the mediation observed in H5 is partial, as the direct relationship between Harmonization and FIB was also found to be significant. Furthermore, the sixth hypothesis (H6) investigated the mediation role of CKM in the relationship between information exchange and FIB. The analysis indicates that this hypothesis was found to be significant, with a p-value of 0.032 and a t-value of 2.146. Additionally, the LL value of 0.020 and the UL value of 0.196 support the presence of significant mediation. Again, the mediation observed in H6 is partial, as the direct relationship between Information Exchange and FIB was also found to be significant. These significant findings provide support for the proposed mediation hypotheses, indicating that CKM plays a significant mediating role in the relationships between Solidarity, Harmonization, Information Exchange, and FIB. The inclusion of the relevant statistical values enhances the clarity and comprehensibility of the results, strengthening the overall validity and significance of the research findings.

Table 9: Mediation analysis result

Hypotheses	OS/Beta	SM	SD	95% C.I. Bias Corrected		T	P	Decision
				LL	UL			
H4: Solidarity -> CKM -> FIB	0.086	0.091	0.037	0.024	0.161	2.348	0.019	Supported
H5: Harmonization -> CKM -> FIB	0.131	0.136	0.063	0.022	0.264	2.081	0.037	Supported
H6: I. Exchange -> CKM -> FIB	0.1	0.111	0.047	0.02	0.196	2.146	0.032	Supported

DISCUSSIONS

Customer-employee exchange and firm innovative behaviour

The study sought to understand the influence of the various aspects of customer-employee exchange, namely; solidarity, harmonization and information exchange on firm innovative behaviour. The findings of the study indicate that solidarity has an effect on firm innovative behaviour. It shows that when an enterprise is

committed to the preservation of good relations with the customer business relationships are improved enormously. The continued relationship between the firm and the customers enables the firm to get enough information to come up with important new products or new ways of providing services in the future. This could be new technology or improving the quality of an existing product/service. As advanced by *Zhao et al.*,(2016*)* the FIB represents those research and development (R&D) activities that are geared towards providing new ways of doing business like new technology, as well as improving the quality and efficiency of current products. It is important to note that the R&D, which is usually associated with large corporations, comes with a huge budget for consistent research into new product development.

This development may not sit well with small business. It, therefore, behoves them to find solutions to their own form of research, which is the continuous preservation of good relationships with customers.

Harmonization is found to have an effect on FIB. This means that the firms are able to put in effort in resolving disagreement with customers in a most amicable manner. Sometimes, when disagreements persist longer than expected, third parties are brought in to help resolve them. The firms, by this, are able to ensure that they create new forms of approaching customer concerns in the future and or improve on the existing ones. The relationship is said to be in a positive direction, meaning the more the firm and the customer become conscientious about maintaining a cooperative relationship the firm benefits by becoming more innovative. Thus, the existence of mutual understanding on how disputes are settled creates more beneficial relationships.More avenues for interactions apart from the traditional forms (suggestion boxes, in-person or over-the-counter) should be provided for dissatisfied consumers to provide their dissatisfaction level. Whilst some small enterprises are still in limbo as to the adoption of other forms of media, others have made it a point to form a social media group (whatsApp, Facebook, Instagram), which are usually peculiar to larger corporations in the country. Dissatisfaction arises when the customer perceives an unmet need. As suggested by *Duwerger* (2012) customers innovative ideas are prompted either by their unmet needs and/or by their knowledge of an alternative similar service which could cause switching behavior. For instance, service providers are supposed to communicate changes in service delivery schedules to customers on time rather than leaving it for them to find out all by themselves. This has the ability to create dissatisfaction among customers. When such happens,firms can turn it into a positive outlook by pouncing on the misnomer to their advantage by providing better avenues of communication.

Information exchange has been found to influence FIB. Thus, the SMEs have made it a point, along with their customers, to keep each other informed about events or changes that may affect the other party. The exchange of information between the provider and the customer takes place frequently and sometimes informally as well. Some customers may have the innate characteristics of promoting innovative behaviour for which employees of the enterprise could find useful. Consumers who are seen to possess high level of innovativeness could tend

to be important asset for the service provider. These help in making the SMEs become wary of obsolete procedures and continue to strive towards service innovations. It is worthy of note that the variables identified, solidarity, harmonization and information exchange have an important role to play in respect of an SMEs' ability to bring new ideas in product improvement, new product development and service provision.

The mediating role of customer knowledge management

The study further sought to understand the mediating role of customer knowledge management in the relationship between customer-employee exchange (Solidarity, Harmonization and Information exchange) and FIB. Firstly, the direct relationship between customers-employee exchange and FIB has already been established. The mediation effect of customer knowledge management has also been established. This means that even though customer knowledge management plays a role in determining the importance of customer-employee exchange on firm innovative behaviour, the role is seen as partial. Even though, it does not take only customer knowledge to directly affect the relevance of customer interactions on firm innovative behaviour, it does provide an important platform for improvement in innovation.

Employee motivation to have knowledge of technology (*Akram et al.*, 2020) as well as consumers in the work setting results in high levels of willingness to adopt and execute innovative behavior. Customer Knowledge acquisition has been demonstrated to have an important role on the extent of the influence of customer-employee interactions on FIB. Firm's employees are sometimes motivated to be innovative and this is highly related to their desire to learn new ideas, approaches, methods etc. gained from customer knowledge. This enhances their performance and leads to their innovative behavior, especially at the workplace (*Afsar & Umrani,* 2020). According to *Chaithanapat et al.* (2022)knowledge management represents a vital factor in firm's innovative activities. This means that, even though, knowledge management influences FIB, managers and owners of SMEs also need to focus on customer employee exchange (solidarity, harmonization, and information exchange) as a key driver for FIB in SMEs, and it can indirectly affect innovation quality.

CONCLUSIONS

The study aimed at investigating the effects of customer-employee exchange on firm innovative behaviour (FIB). It further sought to determine the extent to which customer knowledge management mediate the relationship between customer-employee exchange (Solidarity, Harmonization and Information exchange) and FIB. All the three elements constituting customer-employee exchange have been found to have a positive influence on FIB. This is similar to the works of *Li & Hsu* (2016) who found that customer-employee exchange have had a profound impact on innovative behaviour. For firms to continually improve on their innovative

behaviour, they must strive harder to ensure that their interactions with the customers are targeted or directed rather than being haphazard. This way the SMEs can get enough information from customers due to their mutual information sharing activities.

The study recommends that since enterprises have limited resources especially when compared to large corporations much time should be dedicated to finding new ways of doing business (innovation) rather than having to rely on obsolete methods. Being innovative does not equate to fully adoption of what the larger companies do, but finding ways to adapt to the new ways of doing business is necessary. That notwithstanding, a lot of these enterprises, because they are not seemingly operating like the large corporations, they tend to ignore certain widely acceptable divisions and assignment of responsibilities. However small the enterprise is, relevant departments (such as marketing or HR) need to be created in reference to their resource limitations and be made consistent with current trends in organizational behavior. To this end, the result is necessary to encourage the essentials of customer interactions for the purpose of knowledge management, hence innovation.

Implications

It is worthy of note that the findings of this study provide a practical reference for management. Firm innovativeness is essential in the continuous development of enterprises, especially those with very limited resources. First of all regular interactions between customers and employees must be encouraged at all times and not limited to working hours. Channels as well as duration of communications seem to be limited to working hours only, understandably due to limited financial resources. However, as stated earlier, and despite their limitations guaranteed future revenues can be associated with the right investment. This should be done by incorporating technology-related customer interaction points such as social media, email, and interactive online communities, and be available even after work hours. A lot of these SMEs either do not have an online presence or are notactive (when present) so are usually restricted to communications via brick-and-mortar. Though some of them realize the importance of online presence, they need to apply the relevant technology to consolidate offline gains. The digital economy has the ability to add to the value chain for competitive advantage.

Some consumers are innately innovative and so those who are seen to be important in providing regular feedback and suggestions that improve the service provision or product development must be identified and targeted. They can be categorized according to their level of knowledge in innovation as suggested by (*Sarmah et al.*, 2021). For instance, trustworthy customers can be identified to provide them with some form of conventional channels where they are allowed to directly present constructive suggestions (information, customer knowledge) and be subsequently rewarded. The rewards can be in a form of recognition or discount on some identified products.

REFERENCES

Adedeji, P. A., Akinlabi, S., Madushele, N., & Olatunji, O. O. (2020). Wind turbine power output very short-term forecast: A comparative study of data clustering techniques in a PSO-ANFIS model. *Journal of Cleaner Production*, *254*, 120135. https://doi.org/10.1016/j.jclepro.2020.120135

Adom, K., Tettey, L. N., & Acheampong, G. (2022). Understanding relationship marketing strategy in Ghana's informal economy: A case of micro, small and medium enterprises. *Journal of Research in Marketing and Entrepreneurship*, *25*(2), 253–269. https://doi.org/10.1108/JRME-03-2022-0033

Afsar, B., & Umrani, W.A. (2020). Transformational leadership and innovative work behavior: the role of motivation to learn, task complexity and innovation climate. *Eur. Journal of Innovation Management*, *23*(3), 402–428. https://doi.org/10.1108/EJIM-12-2018-0257

Aghion, P., Akcigit, U., Howitt, P. (2014). What do we learn from schumpeterian growth theory? *Handbook of Economic Growth*, *2*. 515–563. https://doi.org/10.1016/B978-0-444-53540-5.00001-X

Ahinful, G. S., Boakye, J. D., & Osei Bempah, N. D. (2023). Determinants of SMEs' financial performance: Evidence from an emerging economy. *Journal of Small Business & Entrepreneurship*, *35*(3), 362–386. https://doi.org/10.1080/08276331.2021.1885247

Akram, T., Lei, S., Haider, M. J., & Hussain, S. T. (2020). The impact of organizational justice on employee innovative work behavior: Mediating role of knowledge sharing. *Journal of Innovation & Knowledge*, *5*(2), 117–129. https://doi.org/10.1016/j.jik.2019.10.001

Al-Shammari, M. (2009). *Customer Knowledge Management: People, Processes, and Technology*. IGI Global. https://doi.org/10.4018/978-1-60566-258-9

Asare, A. O. (2014). Challenges affecting SME's growth in Ghana*, OIDA International Journal of Sustainable Development*, 07(06), 23–28.

Bacon, E., Williams, M. D., & Davies, G. (2020). Coopetition in innovation ecosystems: A comparative analysis of knowledge transfer configurations. *Journal of Business Research*, *115*, 307-316. https://doi.org/10.1016/j.jbusres.2019.11.005

Belkahla, W., & Triki, A. (2011). Customer knowledge enabled innovation capability: Proposing a measurement scale. *Journal of Knowledge Management*, *15*(4), 648–674. https://doi.org/10.1108/13673271111152009

Biesanz, J. C., West, S. G., & Millevoi, A. (2007). What do you learn about someone over time? The relationship between length of acquaintance and consensus and self-other agreement in judgments of personality. *Journal of Personality and Social Psychology, 92*(1), 119–135. https://doi.org/10.1037/0022-3514.92.1.119

Bowman, D., &Narayandas, D. (2001). Managing customer-initiated contacts with manufacturers: The impact on share of category requirements and word-of-mouth behavior. *Journal of Marketing Research, 38*(3), 281–297. https://doi.org/10.1509/jmkr.38.3.281.18863

Chaithanapat, P., Punnakitikashem, P., KhinKhin Oo, N. C., & Rakthin, S. (2022). Relationships among knowledge-oriented leadership, customer knowledge management, innovation quality and firm performance in SMEs. *Journal of Innovation & Knowledge*, *7*(1), 100162. https://doi.org/10.1016/j.jik.2022.100162

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillside, NJ. Lawrence Erlbaum Associates.

Davenport, T. & Prusak, L. (1998). *Working knowledge*. Harvard Business School Press

Duverger, P. (2012). Using Dissatisfied Customers as a Source for Innovative Service Ideas. *Journal of Hospitality & Tourism Research*, *36*(4), 537–563. https://doi.org/10.1177/1096348011413591

Fernandes, K. J., Milewski, S., Chaudhuri, A. & Xiong, Y. (2022). Contextualising the role of external partnerships to innovate the core and enabling processes of an organisation: A resource and knowledge-based view. *Journal of Business Research*, 144. 146–162. https://doi.org/10.1016/j.jbusres.2022.01.091

Fornell C. & LarckerD. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18* (1). 39–50. https://doi.org/10.1177/002224378101800104

Gebert, H., Geib, M., Kolbe, L., & Riempp, G. (2002). Towards Customer Knowledge Management: Integrating Customer Relationship Management and Knowledge Management Concepts. In *ICEB 2002 Proceedings (Taipei, Taiwan)*. https://aisel.aisnet.org/iceb2002/86/

Geisser, S. (1975). The Predictive Sample Reuse Method with Applications. *Journal of the American Statistical Association*, *70*(350), 320–328. https://doi.org/10.1080/01621459.1975.10479865

Ghana Statistical Service (2023). *2021 Ghana Population and Housing Census*. https://census2021.statsghana.gov.gh/

Grant, J. (2002). Learning needs assessment: Assessing the need. *BMJ*, *324*(7330), 156–159. https://doi.org/10.1136/bmj.324.7330.156

Guan, Y., Zhang, L., Zheng, L., & Zou, H. (2021). Managerial liability and corporate innovation: Evidence from a legal shock. *Journal of Corporate Finance*, *69*, 102022. https://doi.org/10.1016/j.jcorpfin.2021.102022

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: A comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science*, *45*(5), 616–632. https://doi.org/10.1007/s11747-017-0517-x

Hall, B. H., Jaffe, A., & Trajtenberg, M. (2005). Market value and patent citations. *RAND Journal of Economics, 36*(1), 16–38.

Hügel, S. (2019). Reconsidering Firm Innovativeness. In S. Hügel (Ed.), *Innovation in Service Industries: An Investigation of the Internal and External Organizational Contexts from the Laboratory of Real Estate* (pp. 17–36). Springer Gabler. https://doi.org/10.1007/978-3-658-27179-4_3

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic ManagementJournal*, *20*(2), 195–204. https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<195::AID-SMJ13>3.0.CO;2-7

Imran, M. & Akhtar, I. (2022). Impact of Supervisor Feedback, Customer-Employee Exchange, and Creative Personal Identity on Innovative Behavior. In P. Ordóñez de Pablos (Ed.), *Handbook of Research on Developing Circular, Digital, and Green Economies in Asia* (pp. 140-163). IGI Global. https://doi.org/10.4018/978-1-7998-8678-5.ch008

Joshi, A. W., & Sharma, S. (2004). Customer knowledge development: Antecedents and impact on new product performance. *Journal of Marketing, 68*(4), 47–59. https://doi.org/10.1509/jmkg.68.4.47.42722

Kakhki, M. K, Malakooti Asl, N., & Parirokh, M. (2021). Assessment of customer knowledge management in academic libraries: Design and validation of a checklist. *The Journal of Academic Librarianship*, *47*(6), 102459. https://doi.org/10.1016/j.acalib.2021.102459

Keith, J. E., Lee, D.-J., & Leem, R. G. (2004). The Effect of Relational Exchange Between the Service Provider and the Customer on the Customer's Perception of Value. *Journal of Relationship Marketing*, *3*(1), 3–33. https://doi.org/10.1300/J366v03n01_02

Khosravi, A., Hussin, A. R. C., & Minaei-Bidgoli, B. (2017). Toward a Customer Knowledge Management Model for Enhancing Enterprise Software Quality. *Advanced Science Letters*, *23*(9), 9035-9038. https://doi.org/10.1166/asl.2017.10017

Klein, A. (1998). Firm Performance and Board Committee Structure. *The Journal of Law and Economics*, *41*(1), 275–304. https://doi.org/10.1086/467391

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, *11*(4), 1-10. https://doi.org/10.4018/ijec.2015100101

Lee, J. Y., Choi, B. C., Ghauri, P. N., & Park, B. I. (2021). Knowledge centralization and international R&D team performance: Unpacking the moderating roles of team-specific characteristics. *Journal of Business Research*,*128*, 627-640. https://doi.org/10.1016/j.jbusres.2020.06.052

Lee, S. M., &Trimi, S. (2018). Innovation for creating a smart future. *Journal of Innovation & Knowledge*, *3*(1), 1-8, https://doi.org/10.1016/j.jik.2016.11.001

Li, M., & Hsu, C. H. C. (2016). Linking customer-employee exchange and employee innovative behavior. *International Journal of Hospitality Management*, *56*, 87–97. https://doi.org/10.1016/j.ijhm.2016.04.015

Liu, P., & Li, H. (2020). Does bank competition spur firm innovation? *Journal of Applied Economics*, *23*(1), 519–538. https://doi.org/10.1080/15140326.2020.1806001

Lv, P., &Xiong, H. (2023). Financial Openness and Firm Innovation: Evidence from China. *Emerging Markets Finance and Trade*, *59*(4), 998–1011. https://doi.org/10.1080/1540496X.2022.2119801

Martínez-Sánchez, A., Vicente-Oliva, S., & Pérez-Pérez, M. (2020). The relationship between R&D, the absorptive capacity of knowledge, human resource flexibility and innovation: Mediator effects on industrial firms. *Journal of Business Research*, *118*, 431-440. https://doi.org/10.1016/j.jbusres.2020.07.014

Mensah, S. (2004) A Review of SME Financing Schemes in Ghana. In *Regional Workshop of Financing SMEs, Accra, Ghana in March 2004*. (pp. 1–4). UNIDO. http://www.doc88.com/p-5923947209413.html

Monteiro, B., Santos, V., Reis, I., Sampaio, M. C., Sousa, B., Martinho, F., José Sousa, M., & Au-Yong-Oliveira, M. (2020). Employer Branding Applied to SMEs: A Pioneering Model Proposal for Attracting and Retaining Talent. *Information*, *11*(12), https://doi.org/10.3390/info11120574

Namasivayam, K., & Mattila, A. S. (2007). Accounting for the joint effects of the services cape and service exchange on consumers' satisfaction evaluations. *Journal of Hospitality & Tourism Research*, *31*(1), 3–18. https://doi.org/10.1177/1096348006292996

Nitzl, C. (2016). Partial Least Squares Structural Equation Modelling (PLS-SEM) in Management Accounting Research: Directions for Future Theory Development. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2469802

OECD (1997). *Globalization and Small and Medium Enterprises, Synthesis Report*. Organization for Economic Cooperation and Development.

Pallas, F., Böckermann, F., Goetz, O., & Tecklenburg, K. (2013). Investigating Organisational Innovativeness: Developing a Multidimensional Formative Measure. *International Journal of Innovation Management*, *17*(04), 1350009. https://doi.org/10.1142/S1363919613500096

Pereira, V., & Bamel, U. (2021). Extending the resource and knowledge based view: A critical analysis into its theoretical evolution and future research directions. *Journal of Business Research*, *132*, 557-570. https://doi.org/10.1016/j.jbusres.2021.04.021

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). SmartPLS 3 [computer software]. Bönningstedt: SmartPLS. https://www.smartpls.com

Rowley, J. E. (2002). Reflections on customer knowledge management in e-business. *Qualitative Market Research: An International Journal*, *5*(4), 268–280. https://doi.org/10.1108/13522750210443227

Rubera, G., & Kirca, A. H. (2012). Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration. *Journal of Marketing*, *76*(3), 130–147. https://doi.org/10.1509/jm.10.0494

Sarmah, B., Shukla, Y., Chatterjee, R., & Kamboj, S. (2021). Customer participation in service innovation using SNS smartphone apps: an investigation of the Indian hotel service industry. *International Journal of Emerging Markets*, *18*(9), 2971–2992. https://doi.org/10.1108/ijoem-11-2020-1357

Sawhney, M. & Prandelli, E. (2000). Beyond Customer Knowledge Management: Customers as Knowledge Co-Creators. In Y. Malhotra (Ed.), *Knowledge Management and Virtual Organizations* (pp. 258-281). IGI Global. https://doi.org/10.4018/978-1-930708-65-5.ch014

Sierra, J. J., & McQuitty, S. (2005). Service providers and customers: Social exchange theory and service loyalty. *Journal of Services Marketing*, *19*(6), 392–400. https://doi.org/10.1108/08876040510620166

Solnet, D. (2007). Employee–Customer Linkages: A Social Identification Perspective in a Hotel Industry Context. *Journal of Hospitality and Tourism Management*, *14*(2), 129–143. https://doi.org/10.1375/jhtm.14.2.129

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)*, *36*(2), 111-133. https://doi.org/10.1111/j.2517-6161.1974.tb00994.x

Taherparvar, N., Esmaeilpour, R., & Dostar, M. (2014). Customer knowledge management, innovation capability and business performance: a case study of the banking industry. *Journal of Knowledge Management*, *18*(3), 591–610. https://doi.org/10.1108/jkm-11-2013-0446

Thoumrungroje, A., & Racela, O. C. (2022). Innovation and Performance Implications of Customer-Orientation across Different Business Strategy Types. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(4), 178. https://doi.org/10.3390/joitmc8040178

Valaei, N., Rezaei,S., & Ismail, W. K. W. (2017). Examining learning strategies, creativity, and innovation at SMEs using fuzzy set Qualitative Comparative Analysis and PLS path modeling. *Journal of Business Research*, *70*, 224–233. https://doi.org/10.1016/j.jbusres.2016.08.016

Wang, Y.-C., & Lang, C. (2019). Service employee dress: Effects on employee-customer interactions and customer-brand relationship at full-service restaurants. *Journal of Retailing and Consumer Services*, *50*, 1–9. https://doi.org/10.1016/j.jretconser.2019.04.011

Wilde, S. (2011). *Customer Knowledge Management: Improving Customer Relationship through Knowledge Application*. Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-16475-0

Zastempowski, M. (2022). What Shapes Innovation Capability in Micro-Enterprises New-to-the-Market Product and Process Perspective. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(1), 59. https://doi.org/10.3390/joitmc8010059

Zhan, Y., Tan, K. H., & Huo, B. (2019). Bridging customer knowledge to innovative product development: A data mining approach. *International Journal of Production Research*, *57*(20), 6335–6350. https://doi.org/10.1080/00207543.2019.1566662

Zhao, S., Sun, Y., & Xu, X. (2016). Research on open innovation performance: A review. *Information Technology and Management*, *17*(3), 279–287. https://doi.org/10.1007/s10799-015-0231-7

Corresponding author:

Diyawu Rahman ADAM
Hungarian University of Agriculture and Life Sciences, Kaposvár Campus, 7400 Kaposvár, Guba Sándor u. 40. Hungary
e-mail: adamsdeown@gmail.com

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EXAMINATION OF THE PERFORMANCE OF FOOD INDUSTRY ENTERPRISES BETWEEN 2010 AND 2021

Péter FÖLDI[1], Anett PARÁDI-DOLGOS[2], Tibor BAREITH[3]
[1]Budapest Business School, 1055 Budapest, Markó u. 29-31. Hungary
[2]Hungarian University of Agriculture and Life Sciences, 7400 Kaposvár, Guba Sándor u. 40. Hungary
[3]Centre for Economic and Regional Studies, 1097 Budapest, Tóth Kálmán u. 4. Hungary

ABSTRACT

In the case of any state, the success of its corporate sector is a cardinal question for its national economy. Consequently, the issue of profitability of the corporate sector has always attracted considerable attention from experts dedicated to understanding successful economic functioning. Regarding academic research priorities, it is essential to identify the identifiable factors, mechanisms of action and trends that are important for the success of corporate growth. In the light of previous studies on the performance of the Hungarian food sector, the above findings are also confirmed, and the main focus of this research is to analyse the factors that play a significant role in stimulating the profitability of the Hungarian food industry. The relevant research period is mainly the period before, during and after the coronavirus epidemic.
Keywords: COVID, food industry, profitability, performance under influence factor, subsidies
JEL codes: G01, G31, G38

INTRODUCTION

The economy, and in particular the food industry, is one of the main pillars of society, since it is the sector that provides the basis for meeting one of the most important human needs, namely physiological needs. If we have a look at the role each domestic industry plays in the national economy, we can say that the share of the food industry in Hungary is around 3.2% of domestic workers were employed in the food industry, while food industry development accounted for around 2.7% of investments in the national economy. The sector accounted for 8.8% of export performance (*KSH*, 2020). Although the food industry was not spared by the outbreak of the coronavirus, which shook its stability and set back its previous performance indicators, we can still talk about one of the most important sectors.

The fact that profitability has remained substantially unchanged since the beginning of the new millennium and the fact that the food industry is a major export sector, further increase the importance of the food industry in the national economy (*Tóth et al.* 2019). It is therefore highly justified to analyse the food sector in order to obtain a more accurate picture of its importance, and for this purpose it is essential

to understand the factors that significantly determine and influence profitability. To this end, the so-called GMM estimator of *Arellano* & *Bond* (1991) can be applied, which uses dynamic panel data to understand the conditions and most important factors affecting the sector.

After a brief presentation of the domestic situation of the sector, we will review the main factors that determine the profitability of food businesses as noted in the literature. Agricultural and food industries are particularly strong in the fruit and meat sectors, which are still the flagships of the Hungarian food industry (*Nagy et al.* 2021). In terms of competitiveness, Hungary needs to make use of subsidies and development measures as these enterprises can only rely on them in the event of a possible adverse period. It cannot be said that the food enterprises are capital strong, except for 1 or 2 enterprises. Therefore, the number of subsidies and developments cannot be neglected. The stability of businesses has a significant impact not only on the functioning of the economy, but also on the domestic supply of basic needs (*Madari*, 2021). The more significant the businesses at the centre of the issue are considered, the more important it is to understand the reasons that make these businesses successful and profitable. In the context of research focusing on this sector, it is also important to point out that the corporate structure of the Hungarian food industry differs significantly from firms in other EU Member States (*Nagyné*, 2004). Thus, it is a competitive factor that is important to examine in order to determine how to improve the evolution of corporate profits (*Eklund & Lappi*, 2019).

The integration of infotechnology within the sector is significant (over 50%), but the application of more advanced high-tech solutions is less widespread. Typical examples are the use of enterprise management systems or artificial intelligence-based services and cloud services (*Debrenti & Herdon*, 2021). With these challenges in mind, it is of paramount importance to build on the foundations of a strong historical tradition, with a sufficiently stable vision and innovation potential, and with future development directions and opportunities. We will only make small references to these. Hungarian food industry operators must therefore keep their revenue generation ambitions focused on the above.

We were curious as to whether the companies engaged in export sales are more effective and profitable than their peers who only sell domestically. In the case of food industry enterprises, it is questionable how much they can spend on investments, developments and R&D without using subsidies. We wanted to see how true the previous studies on profit persistence were and what the results of our current research are for food businesses. We also examined the effectiveness of the 10 largest companies compared to other competitors.

Research background on the performance of the Hungarian food industry

In international terms, the main 'markets' for research and studies based on the analysis of structural and firm-specific factors are those countries whose industry is highly developed and whose role in the national economy is also important. This is particularly important if the industry of particular importance has the potential to have an above-average impact on shaping the future direction and development potential of the national economy. Typical issues might be the relationship between

concentration and profitability within a given industry, or barriers to entry. These are, of course, important factors in both the intensity of competition in an industry and the strategic underpinnings of corporate success, but it is important to add that in the digital world these competencies, which have a major impact on competitiveness, are worth thinking about explicitly (*Karagiannopoulos et al.* 2005). Previous research found a number of links between concentration and profitability (*Kwak & Kim*, 2020; *Hui et al.* 2019; *Al Arif & Awwaliyah*, 2019), and also highlights that success is a key issue in terms of the ability of an organisation to generate continuously improving returns from its efficient operations. The importance of the role of firm-specific factors has been a focus area for a number of studies, and these have consistently supported the importance of success and profitability (*Vijayakumar*, 2011; *Seelanatha*, 2011; *Zainudin et al.* 2018; *Li & Islam*, 2019).

Research on the success of food businesses in Hungary often emphasises that market orientation is a necessary element of success from a marketing perspective (*Kiss et al.* 2020). However, the importance of each perspective does not end there - there is also the question of what success means for the given business (*Szanyi-Gyenes & Almási*, 2021). Another similar performance evaluation aspect is the operation of the company's various activities and processes and the significance of the management culture within the company (*Nagy et al.* 2020). The level of digitalisation is also a frequently raised issue, especially in the context of marketing and market orientation which has already been mentioned (*Berezvai et. al.*, 2019). Profitability is one of the most important indicators of business performance, and profit is a key driver of market competition. The level of market competition in an industry can be characterised by profit persistence that shows the rate at which the profits of market participants profit to equilibrium (average yield).

MATERIALS AND METHODS

In our model we estimate the profit persistence of Hungarian food industry and firm control variables. In addition to theoretical considerations, available data played an important role in the choice of explanatory variables.

The data used in this research was taken from the CREFOPORT company database. The analysis was based on a sample of Hungarian small, medium and large food companies which were operating between 2010 and 2021. The analysis excluded companies for which no financial data were available. The database contains 23,823 items for the observation period, with a total of 3,268 food companies in the sample. When selecting the companies, it was important to ensure that the companies selected covered the whole range of SMEs in Hungary and that the conclusions and recommendations that were drawn could be used to improve the industry. The focus of our analysis is on ROA, which is the ratio of profit after tax to total assets. We used the natural logarithm of turnover as a control variable for plant size, proxy variables for long (long-term liabilities/balance sheet total) and short (current assets/short-term liabilities) risk for risk, and the 3-year rolling standard deviation of the ROA ratio as a third risk measure. This is detailed in *Table 1*. A further variable included is tender activity, i.e. whether the firm had had a winning tender in a given year, measured by a dummy variable. We show two independent variables to control for industry effects.

The number of firms indicates how many firms were operating in the given industry and year, and the logarithm of industry turnover controls for industry size through industry turnover.

A standard approach in profit persistence examinations can be considered to be dynamic panel models which provide the most accurate estimates to our current knowledge (*Hirsch*, 2017). The dynamic model uses the GMM estimator system defined by *Arellano and Bond* (1991).

The outlined model used in our analysis can be expressed as follows (1):

$$\pi_{i,t} = \sum_j \alpha_j(X_{j,i,t}) + \lambda\pi'_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where $\varepsilon_{i,t} = \eta_i + \nu_{i,t}$. The Arellano-Bond GMM estimation is based on the first difference of the equation, which allows to eliminate time-independent firm-specific (η_i) effects (*Hirsch & Gschwandtner*, 2013). Firm- and industry-specific variables (X_j), that can explain the profit persistence of firms can be included in the model. The Arellano-Bond GMM estimation is based on the first difference of the equation, which allows to eliminate time-independent firm-specific (ηi) effects (*Hirsch & Gschwandtner*, 2013). Firm- and industry-specific variables (X_j) that can explain the profit persistence of firms can be included in the model. The GMM estimation can be considered consistent if there is no second-order autocorrelation in the error factors and the instruments are appropriate. The lagged dependent variable is endogenous, all other variables in the model are exogenous (*Hirsch & Gschwandtner*, 2013).

The Blundell-Bond estimator assumes that there is no autocorrelation between individual error factors, and it is necessary for the panel effect to be independent of the first difference of the first observation of the dependent variable for it to work properly. Similarly to the Arellano-Bond estimator, the Blundell-Bond works well when we have many observations and the time parameter is finite (large N, small T type sample).

The bottom and top one percent of the distribution of variables were trimmed because of the outliers. The database certainly contains human errors, there are several steps to fill in the database with data, and then problems can occur during queries. For this reason, a percentage 'truncation' of the data is justified. Treatment was taken where necessary.

Return on assets (ROA) was used as a dependent variable to measure corporate profitability. ROA is the return on assets, profit after taxation, divided by total assets.

The model includes a total of 9 dependent variables, 6 of which measure firm-specific effects and 3 of which measure industry-specific effects. The variable for export sales is a binary variable, which takes a value of 1 if the company had export sales in the year in question. It will not be so specific for SMEs, as this form of sales will be true for large firms (see descriptive statistics in *Table 1*).

The control variable regarding tender activity is a dummy variable, similar to export sales, and has a value of 1 if the company has drawn at least 1 HUF of tender funds. Tendering activity can be critical for a company. If a company has accessed tender funding, we can assume that there are investments and ideas for the future (*Kis-Tóth & Vígh*, 2013). It is important not to confuse the access to tender funding

with tender activity, as not all tenders will be winning tenders, the variable in the model only considers winning tenders.

Table 1: Descriptive statistics for food businesses from 2010 to 2021

Variable	N	Mean	p50	SD	Min	Max
ROA_w	23823	0.060	0.043	0.221	-0.946	0.710
tender_dummy	23823	0.928	1	0.259	0	1
export_dummy	23823	0.130	0	0.337	0	1
number of firms	23823	2206.662	2276	167.113	1756	2358
ln_revenue	23823	18.349	18.370	2.393	11.798	24.011
short risk	23823	5.919	1.683	17.097	0.094	137.837
long risk	23823	0.086	0	0.154	0	0.739
ln_industry revenue	23823	28.757	28.722	0.153	28.472	29.035
top10_share	23823	0.280	0.276	0.013	0.262	0.305
ROA_sd3	19473	0.108	0.054	0.151	0.001	0.917

The number of firms variable shows how many firms were active in the food industry in a given year. In the case of this variable, only the number of SMEs included in our database was considered. One condition for perfect competition is that there is an infinite number of sellers and buyers in the market. Based on this assumption, the expansion of the supply side will worsen profitability, while the exit of firms will improve profitability due to a loosening of competition in the market.

The development of turnover is influenced by a number of factors such as the company's customer policy. This is a theoretical assumption that in our analysis turnover is a representation of the size of the company, and due to economies of scale, larger companies can operate more cost-efficiently and thus, they will be more profitable, ex ante anyway.

A total of three variables were used to measure risk. This is due to the economic rationale that higher returns can be achieved by taking more risk. Short-term risk is the ratio of current assets to current liabilities, i.e. they show the liquidity position of the company. In contrast, long risk can be interpreted as leverage: long-term liabilities divided by total assets. Our third risk indicator shows the 3-year rolling standard deviation of profitability (ROA). By using the standard deviation of profitability, we can incorporate a risk indicator into the model that does not directly use the financial statement data.

Industry revenue and market share of the top 10 highest revenue companies (top10_share) are exogenous industry variables in the model. The mechanism of action of industry revenue is the same as the number of firms variable, but in this case, we have the assumption that all firms are equal, the size of revenue determines market power. According to our assumption, higher industry revenue reduces competition. However, this effect can only prevail if, in the meantime, market shares do not exhibit significant spikes. The top10_share is intended to measure this phenomenon, if the top 10 firms can increase their market share, it is expected to reduce the industry average profitability. The big players are skimming the market.

Profit persistence research is mostly carried out using econometric estimations, which are usually made using AR1, OLS or GMM methods. However, Markov chains take a different approach to measure. Markov chains can be used to examine the probabilities that a given companies will move to a more profitable or less profitable groups. To evaluate the results, we can take into account the values of mobility, which we can look at in general. On the other hand, from the perspective of the effects used for our research. Furthermore, econometric estimators usually measure profit using continuous variables (usually ROA), whereas Markov chains work with discrete values.

The companies in the sample were divided into quintiles and then into deciles, based on the profitability (ROA) ranking. Each group is labelled from 1 to 5(10), where 1 is the least profitable group and 5(10) is the group which contains the companies with the highest profitability. The output of the Markov chains is a transition probability matrix, which represents the probabilities of which firms move into a given group (either up or down). The diagonal of the matrix is the most important from the point of view of profit persistence, and the closer its value is to 1, the higher its profit persistence is, i.e. the profit share does not change much from year to year, so everyone stays in their own group. As a result, profit is „sticky".

Markov chains are modelled by the probability of the transition of the profit rate of firms between two points in time. This transition probability is calculated with respect to the proportion of firms in the current profitability group. We then use the resulting transition probability matrix to estimate the probability of transitions between profitability groups.

We consider it important to note that the estimated probabilities will only be unbiased if the process of generating the data is constant and if the sample size is sufficiently large.

RESULTS AND DISCUSSION

When presenting the results, the Markov chain results are presented first, followed by the dynamic panel estimates.

Markov chain analysis

The estimates presented in our article are for the food manufacturing sector and the results are presented in *Table 2* and *Table 3*.

Table 2: Transition probability matrices (food industry)

ROA	(1)	(2)	(3)	(4)	(5)	P_j
(1)	**45,56**	19,29	11,86	10,58	12,71	100
(2)	19,23	**44,78**	20,9	9,96	5,14	100
(3)	10,99	20,87	**39,12**	20,68	8,34	100
(4)	9,20	10,64	21,55	**40,40**	18,21	100
(5)	10,92	6,00	9,08	23,18	**50,82**	100
P_j	18,5	20,5	20,93	21,24	18,84	100

Table 3: Transition probability matrices (food industry)

ROA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	Pj
(1)	**31,69**	14,05	6,69	6,87	4,93	5,6	5,78	6,02	7,12	11,25	100
(2)	14,09	**31,31**	14,67	9,62	6,86	6,17	5,21	4,31	3,56	4,2	100
(3)	8,48	13,09	**31,7**	17,45	9,5	6,79	4,8	3,39	2,57	2,23	100
(4)	6,82	10,03	16,01	**24,31**	15,61	9,98	7,21	4,55	3,46	2,03	100
(5)	4,94	7,05	8,82	15,92	**23,88**	15,2	9,45	7	4,41	3,31	100
(6)	4,67	5,31	7,11	9,83	15,53	**23,61**	15,14	9,83	5,65	3,31	100
(7)	3,96	5,14	5,87	6,51	9,89	17,03	**22,32**	15,37	9,45	4,45	100
(8)	4,58	4,72	4,33	4,58	6,28	9,93	18,11	**24,98**	15,34	7,16	100
(9)	6,3	4,5	3,05	3,45	4,4	6,55	9,7	18,64	**28,29**	15,14	100
(10)	6,87	4,18	2,15	3,33	3,38	3,7	6,44	11,21	23,34	**35,41**	100
Pj	8,76	9,73	10,17	10,34	10,25	10,67	10,59	10,65	10,27	8,57	100

The transition probability matrix in *Table 2* shows the results for 5 groups and *Table 3* shows the results for 10 groups. In the first table, all diagonal values are above 0.4, in the second all diagonal values are above 0.2. There is always, and in every industry, some probability of profit persistence. The question is not this, but what that probability is, and to which extent profit persistence exists. The highest probabilities are found at the lower and upper end of the profitability groups, indicating that poor and good performers have higher profit persistence. Poor performers find it difficult to break out of this state, while high performers are more likely to remain in the more profitable group. The Markov chain analysis does not give a complete picture of the nature of market competition, but there are signs that suggest that the market is not perfect.

Dynamic panel models

In order to evaluate the model describing the profitability of the firms, the GMM (Generalized Method of Moments) method was used with the Arellano-Bond method. After the estimation was to test the suitability of the instruments, which was carried out with the Sargan test. The p-value of the Sargan's test should be higher than 0.05. The results of the diagnostic tests of our first-difference regression model are shown in *Table 4*. The first- and second-order autocorrelation tests also showed no significant results which means that there is no autocorrelation between the differential residual variables. In the case of the Blundell-Bond model, we can test for second-order autocorrelation, and here the model did not show any problems either. These results suggest that the models meet the requirements for diagnostic tests and are likely to be good estimators of firm profitability.

The purpose of the Blundell-Bond estimation procedure is to check the robustness of the Arellano-Bond model results. The interpretation of the results is based on the Arellano-Bond model, and if the results of the Blundell-Bond model contradict the main model, this is indicated.

The focus of our study is profit persistence, this effect is captured by the coefficient of the first lag of the ROA indicator, the coefficient is significant, its value

is 0.267. The results confirm the Markov chain results, the Hungarian food SME sector is not described as perfectly competitive. According to relevant literature, profit persistence in the food industry is generally lower than in the manufacturing industry, but persistence around zero is rare. *Hirsch and Gschwandtner* (2013) measured an abnormal profit persistence between 0.1 and 0.3 in their research on five European countries, while they found profit persistence above 0.3 in their research on the whole economy. In their research, *Molnár et al.* (2021) they found values between 0.11 and 0.34. However, in their study of 3 European countries, *Hirsch et al.* (2020) found results between 0.4 and 0.65.

The results show that higher turnover increases the profitability of the company. Regarding risk, a rise in short risk increases profit. In our case, this means that an improvement in the liquidity position has a positive effect on ROA.

The coefficient of long-term risk is negative, so an increase in the share of long-term liabilities will worsen profitability. This suggests that the profitability of financed investments and projects is lower than the interest paid after external capital. The variable, measuring the dispersion of the profit rate (ROA_sd3), is inversely related to profitability, i.e. profitability decreases with increasing volatility. This is contrary to our expectations and confirms the return-risk paradox theory which states that the relationship between return and risk is not positive after all. Similar results on the risk-return relationship were found e.g. by *Lőrincz* (2007); *Miskolczi* (2017); *Bélyácz & Daubner*, (2021).

Table 4: Results of the dynamic panel estimation

	Arellano-Bond		Blundell-Bond	
	ROA		ROA	
L.ROA	0.267***	(0.021)	0.271***	(0.020)
tender_dummy	0,005	(0.006)	0,015	(0.015)
export_dummy	-0.074***	(0.005)	-0.017*	(0.010)
number of firms	-0.000**	(0.000)	-0.000***	(0.000)
ln_revenue	0.017***	(0.001)	0.048***	(0.005)
short risk	0.000***	(0.000)	0.001***	(0.000)
long risk	-0.130***	(0.009)	-0.119***	(0.018)
ln_industry revenue	0.002	(0.011)	-0.107***	(0.015)
top10_share	-0.274	(0.197)	-0.290*	(0.163)
ROA_sd3	-0.245***	(0.026)	-0.225***	(0.044)
Constant	-0,124	(0.292)	2.476***	(0.414)
Observations	19069		19069	
Number of id	3268		3268	
ar2p	0.679		0.737	
hansenp	0.34		-	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

(In the case of Arellano-Bond model there are standard faults, in the case of Blundell-Bond there are WC robustness standard errors).

There is no statistically verifiable link between the use of grant funding and profitability. However, export activity has a surprisingly negative impact on profitability. This is presumably due to the fact that production costs have increased more than the income from export sales. In addition, it is not negligible that higher transport costs, in addition to rising production costs, may also be behind the fall in profitability. Export sales are also affected by exchange rates.

In the case of industry variables, there is a visible difference between the Arellano-Bond and Blundell-Bond models. In the case of the number of firms variable, the two models are still consistent, i.e. the increase of the number of firms reduces profits, which confirms that profitability decreases as the supply side increases. Conversely, when industry revenue is used instead of the number of firms, this effect is only confirmed by the Blundell-Bond model, with no relationship in the case of the Arellano-Bond estimation. The situation with regard to the top 10 market share is similar, we expect that the increase in this variable reduces profit, which is the case according to the Blundell-Bond model, but according to the Arellano-Bond estimation procedure it has no effect on profit.

CONCLUSIONS

The food industry has undergone a major transformation over the past two decades. In this study, we have analysed the competitive situation of the Hungarian food industry through a model which is suitable for measuring market competition. In the food industry sector, the profit persistence effect is present, i.e. the industry is characterized by imperfect competition.

Our studies have confirmed that firms engaged in export sales are less profitable in this industry, as other studies have also concluded (*Grazzi*, 2011; *Ju & Yu*, 2015; *Gaigné et al.* 2017). Unfortunately, what may contribute to this is the drastic increase in production and transportation costs. Thus, at the moment this industry is facing this problem. It is uncertain when the situation in the industry will stabilize, which is not helped by inflation or the current situation. Similarly to the situation in agriculture, subsidies would be needed here, too, in order to normalise the situation in the long term, which would help to meet everyone's needs.

It is the next factor why food SMEs need support, and that is the existence of investments, development and R&D. According to the model, long risk is negative, i.e. long-term debt reduces profit, so businesses will not borrow to finance their investments, there will be no investment, no development, and the sector will not be competitive. Long-term debt will push firms into a loss-making direction, therefore, food firms will not take long-term loans, this is why the role of subsidies in the system is important (*Bakucs et al.* 2014; *Singh et al.* 2021; *Mokgomo et al.* 2022). According to other arguments, only firms that sell for export can be competitive, which increases profitability (*Fischer & Schonberg*, 2007). In contrast, in the Hungarian food industry, we have discovered that exports reduce profitability. According to *Herczeg et al.* (2020), the higher the ROA value is, the higher the export revenue of the firm on average will be. According to *Kazainé* (2016), export performance does not depend on the ownership composition, a firm with Hunga-rian ownership can be just as likely to be successful as a mainly foreign-owned firm.

We have found that firms with a better liquidity position are more profitable, so those without liquidity problems are stable and more profitable.

Based on the long-risk analysis, we have drawn the conclusion that taking a long-term loan reduces profitability. If the company is not able to do so, there will be no investments and the Hungarian food industry will be at a competitive disadvantage in the medium to long term without innovation. This is an area that needs to be developed in the case of food businesses. The range of subsidies is not negligible in this case as a possible alternative which is more favourable than taking out a long-term loan in this case. In the case of a long-term loan, the enterprise must take risks, whereas if it decides to use the subsidy, it must only decide on its effective use. The conditions for taking out a grant are slightly tougher, but in the long run it can generate more income for the company.

Our research shows that there is profit persistence which is considered average for manufacturing and higher for agriculture.

When we examined industry revenue, we found that the more firms there are, the lower the profits become, as increasing competition leads to decreasing profits. When examining the Blundell-Bond model, we only obtained significant values.
In the case of top10_share, it is also significant only for the Bundell-Bond model, if the top10 takes a larger share of industry revenue, profitability in the industry decreases, the big players take the profits, and eventually small firms go bankrupt.

For the risk number ROA_sd3_w, the higher the risk is, the lower the profit is. All theories say that as risk-taking increases, profit increases (ex ante), but in our study it is the other way around.

In the case of our research, it would be timeless to say that a business that sells abroad is certainly more effective and profitable than its counterparts that sell domestically. This would work in a perfectly competitive world with the exception that there is no exchange rate differential. If we look back to the passed years, there are pitfalls then and now as well. We do not need to have an outstanding balance in a foreign currency in order to experience this, as it is sufficient to sell within the community or outside the community in another currency. When, so to speak, there is not so much impact on the world economy, then this would not even be perceptible, but one bad decision by the government, the EU or the world economy is enough, and investors sound the alarm that we should get rid of the currency of the given country, which brings with it the weakening of the currency of the given country, which then has an impact on the exchange rate in both the short and long term. To stabilize this, the central bank can take steps to normalize the situation.

When COVID19 arrived, it was similar to when a financial crisis started after the bankruptcy of a particular credit institution. At the beginning, no one here knew who and what to expect, whether the business would be able to continue its activities, or if it was completely impossible. Back to the exchange rate differential, which fluctuated quite a bit during this time. There was a company that preferred to withdraw its money from the bank and deposit it in the company's foreign currency treasury, in order to realize only a minimal loss after the transaction. Unfortunately, there are not many options regarding the exchange rate, since we either realize a profit or a loss after a given transaction. We do not realize anything in the event that

the counter value of our account is transferred on the same day. In our studies, what contributes to the decrease in the profitability of export sales is the constantly increasing production and transportation costs. We cannot cover the production and delivery costs even with a fixed contract, since the service company can think of one thing and raise the price to us, but we cannot raise to the foreign partner, so we will lose the extra income, so to speak, and will realize a loss, or break even. Unfortunately, none of them are favourable.

REFERENCES

Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, *58*(2), 277-297. https://doi.org/10.2307/2297968

Bakucs, Z. Falkowski, J. & Fertő, I. (2014): Does Market Structure Influence Price Transmission in the Agro-food Sector? A Meta-analysis Perspective. *Journal of Agricultural Economics*, *65*(1), pp. 1-25. https://doi.org/10.1111/1477-9552.12042

Bélyácz, I., & Daubner, K. (2021). A kockázat elbizonytalanodása és a bizonytalanság növekvő kockázata a gazdasági döntésekben. *Gazdaság és Pénzügy*, *8*(3), 272–324. https://doi.org/10.33926/gp.2021.3.2

Berezvai, Z., Agárdi, I., & Szabolcsné Orosz, J. (2019). A digitális innovációk hatása az élelmiszer-kiskereskedelmi vállalatok teljesítményére = The impact of digital innovations on grocery retail performance. *Statisztikai Szemle*, *97*(10), 915-932. https://doi.org/10.20311/stat2019.10.hu0915

Debrenti, A. S., & Herdon, M. (2021). A magyar élelmiszeripar digitális fejlettségének helyzetértékelése. *Gazdálkodás: Scientific Journal on Agricultural Economics*, *65*(02), 101-120. https://doi.org/10.22004/ag.econ.310591

Eklund, J. E., & Lappi, E. (2019). Persistence of profits in the EU: how competitive are EU member countries?. *Empirica*, *46*(2), 327-351. https://doi.org/10.1007/s10663-018-9399-5

Fischer, C., & Schornberg, S. (2007). Assessing the competitiveness situation of EU food and drink manufacturing industries: An index-based approach. *Agribusiness*, *23*(4), 473–495. Portico. https://doi.org/10.1002/agr.20139

Gaigné, C., Latouche, K., & Turolla, S. (2017). Vertical Ownership and Export Performance: Firm-Level Evidence from the Food Industry. *American Journal of Agricultural Economics*, *100*(1), 46–72. Portico. https://doi.org/10.1093/ajae/aax071

Grazzi, M. (2011). Export and Firm Performance: Evidence on Productivity and Profitability of Italian Companies. *Journal of Industry, Competition and Trade, 12*(4), 413–444. https://doi.org/10.1007/s10842-011-0102-9

Herczeg B., Szabó T., & Bördős K., (2020). Az exportpiacra lépés és az exportvolumen nagyságát befolyásoló tényezők vizsgálata mikroszimuláció modellben, HÉTFA Kutatóintézet.

Hirsch, S. (2017). Successful in the Long Run: A Meta-Regression Analysis of Persistent Firm Profits. *Journal of Economic Surveys*, *32*(1), 23–49. Portico. https://doi.org/10.1111/joes.12188

Hirsch, S., & Gschwandtner, A. (2013). Profit persistence in the food industry: evidence from five European countries. *European Review of Agricultural Economics*, *40*(5), 741–759. https://doi.org/10.1093/erae/jbt007

Hirsch, S., Lanter, D., & Finger, R. (2020). Profitability and profit persistence in EU food retailing: Differences between top competitors and fringe firms. *Agribusiness*, *37*(2), 235–263. Portico. https://doi.org/10.1002/agr.21654

Hui, K. W., Liang, C., & Yeung, P. E. (2019). The effect of major customer concentration on firm profitability: competitive or collaborative? *Review of Accounting Studies*, *24*(1), 189-229. https://doi.org/10.1007/s11142-018-9469-8

Ju, J., & Yu, X. (2015). Productivity, profitability, production and export structures along the value chain in China. *Journal of Comparative Economics*, *43*(1), 33–54. https://doi.org/10.1016/j.jce.2014.11.008

Karagiannopoulos, G. D., Georgopoulos, N., & Nikolopoulos, K. (2005). Fathoming Porter's five forces model in the internet era. *Info*, *7*(6), 66–76. https://doi.org/10.1108/14636690510628328

Li, L., & Islam, S. Z. (2019). Firm and industry specific determinants of capital structure: Evidence from the Australian market. *International Review of Economics & Finance*, *59*, 425-437. https://doi.org/10.1016/j.iref.2018.10.007

Kazainé Ónodi, A. (2016). Exportáló vállalataink sokszínűsége. *Vezetéstudomány / Budapest Management Review*, 47(8), 50–67. https://doi.org/10.14267/veztud.2016.08.05

Kis-Tóth L. & Vígh G. (2013). *Az Unió pályázati rendszere*. Eszterházy Károly Főiskola

Kiss, M., Szakály, Z., & Kovács, B. (2020). Az MKTOR piacorientációt mérő modell adaptációja és kapcsolata a vállalati teljesítménnyel. *Marketing & Menedzsment*, 54(Special Issue II.), 79-91. https://doi.org/10.15170/MM.2020.54.KSZ.II.07

KSH (Központi Statisztikai Hivatal) (2020): *Helyzetkép a mezőgazdaságról, 2020*. https://www.ksh.hu/docs/hun/xftp/idoszaki/mezo/2020/index.html

Kwak, K., & Kim, N. (2020). Concentrate or disperse? The relationship between major customer concentration and supplier profitability and the moderating role of insider ownership. *Journal of Business Research*, *109*, 648-658. https://doi.org/10.1016/j.jbusres.2019.09.033

Lőrincz Zs. (2007). *Kockázatelemzés a növénytermesztésben*. [Doctoral dissertation, Nyugat-Magyarországi Egyetem] http://doktori.uni-sopron.hu/id/eprint/21/1/de_3746.pdf

Madari, Z. (2021). A magyar élelmiszeripari KKV szektor helyzete és kilátásai = Prospects of the Hungarian mid-sized enterprises in agriculture. *Köz-Gazdaság*, *16*(1), 39–49. https://doi.org/10.14267/retp2021.01.05

Miskolczi P. (2017). *Részvényportfóliók kockázatának néhány mérési lehetősége*. [Doctoral dissertation, Debreceni Egyetem] https://dea.lib.unideb.hu/server/api/core/bitstreams/b09da698-640e-4e76-8c32-99e2b84fa382/content

Mokgomo, M. N., Chagwiza, C., & Tshilowa, P. F. (2022). The Impact of Government Agricultural Development Support on Agricultural Income, Production and Food Security of Beneficiary Small-Scale Farmers in South Africa. *Agriculture*, *12*(11), 1760. https://doi.org/10.3390/agriculture12111760

Molnár, D., Csonka, A., & Bareith, T. (2021). Piaci hatékonyság és üzemi jövedelmezőség a legeltetéses állattartásban Magyarországon. *Gazdálkodás*, *65*(4), 320–338. https://doi.org/10.53079/gazdalkodas.65.4.t.pp_320-338

Nagy J., Jámbor Zs., & Freund A. (2021). III.1. Élelmiszeripar iparági összefoglaló. In: Baksa, M., Freund, A., Demeter, K., & Losonci, D. (Eds.), *Üzlet 4.0 - magyarországi vállalati tapasztalatok* (pp. 103-115). Akadémiai Kiadó. https://doi.org/10.1556/9789634546276

Nagy, J., Jámbor, Z., & Freund, A. (2020). Az ipar 4.0 és a digitalizáció legjobb gyakorlatai a hazai élelmiszergazdaságban: Négy esettanulmány. *Vezetéstudomány Budapest Management Review*, *51*(6), 5–16. https://doi.org/10.14267/VEZTUD.2020.06.02

Nagyné Pércsi, K. (2004). Structural changes of the Hungarian meat processing industry influencing the quality strategy of the pig sector. *Journal of Central European Agriculture*, *5*(3), 161-168.

Seelanatha, L. (2011). Determinants of firms' performance: Some Chinese evidence. *Investment Management and Financial Innovations*, *8*(3), 28-38.

Szanyi-Gyenes, X., & Almási, A. (2021). A vezető szerepe a kis- és közepes vállalkozások sikerességében. *Vezetéstudomány / Budapest Management Review*, *52*(3), 40–52. https://doi.org/10.14267/veztud.2021.03.04

Singh, G., Daultani, Y., & Sahu, R. (2021). Investigating the barriers to growth in the Indian food processing sector. *OPSEARCH*, *59*(2), 441–459. https://doi.org/10.1007/s12597-021-00553-1

Tóth, J., Balogh, J. M., Török, Á., & Molnár, A. (2019). Behavioural aspects of innovation decisions: the case of Hungarian food industry. Presentation, 13th International European Forum (Igls-Forum*) (169thEAAE Seminar) on System Dynamics and Innovation in Food Networks, Garmisch-Partenkirchen, Germany, 18-22 February 2019.

Vijayakumar, A. (2011). Management of corporate liquidity and profitability: an empirical study. *International Journals of Marketing and Technology*, *1*(6), 156-175.

Zainudin, R., Ahmad Mahdzan, N. S., & Leong, E. S. (2018). Firm-specific internal determinants of profitability performance: an exploratory study of selected life insurance firms in Asia. *Journal of Asia Business Studies*, *12*(4), 533–550. https://doi.org/10.1108/jabs-09-2016-0129

Corresponding author:

Péter FÖLDI
Budapest Business School
1055 Budapest, Markó u. 29-31. Hungary
e-mail: foldi.peter@uni-bge.hu