

"Do not fear to be eccentric in opinion,
for every opinion now accepted was
once eccentric."

Bertrand Russell



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satisfaction
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B2B E-Commerce
Drivers of start-ups success
Economy of Retail Chains**

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Editorial Foreword

Dear readers,

After experiencing difficult times during the pandemic, researchers became interested in exploring the health and economic implications and finding realistic and viable solutions to support the recovery.

The focus on post-pandemic challenges brought a diversity of socio-economic research topics to the attention of the scientific community, the collective wisdom being called to provide new insights, perspectives, and solutions to help businesses recover, and increase social cohesion.

Reading the current issue, you will discover interesting subjects such as life expectancy and life satisfaction, drivers of start-ups' success, business communication, and social-media impact, B2C e-commerce adoption, and not only.

The authors, experienced and junior researchers, come from different regions of the world European Union (Lithuania, Czechia, Hungary, Germany, Bulgaria, Greece), the Middle East, and Asia and allow you to delve deeper into regional economic and social challenges.

All this is possible due to the hard work and inspiration of our authors, the total involvement of reviewers in improving the journal's quality, and our readers with their constant attention to each Issue for more than a decade.

Enjoy your reading and be part of REASER community!

Prof. Manuela Epure, PhD, MCIM

Deputy Editor-in-chief

Hybrid Communication as a Prospect for Organisation Development

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Abstract. *Recently, hybrid communication is gaining more and more importance in our society (Bielinis, 2020) - due to the COVID-19 pandemic and social restrictions, people were forced to use remote means of communication, thanks to which it was possible not only to avoid, but also to effectively manage the COVID-19 pandemic. However, hybrid communication is relevant not only in this context - thanks to it, members of various organizations can carry out continuous communication and connect 24/7 from anywhere in the world. A study by Berger et al. (2021) found that before the global COVID-19 pandemic, only 35% of organizations used/aspired to use a hybrid work model, but now even 77% use this work model. (Berger, Weber & Buser, 2021). Organizations that previously conducted their activities in a contact manner and could not imagine an effective flexible combination of remote and contact work methods, now face new challenges of internal processes, employee performance and change management. However, properly chosen methods of information transfer help to ensure targeted achievement of organizational goals, change management and smooth internal operational processes. Therefore, in the context of the hybrid work model, active and purposeful communication becomes particularly significant. The aim of the article is to determine the features of hybrid communication when applied to business development in Lithuania. The research showed that hybrid communication encouraged the introduction of new information dissemination channels in the organization, more efficient time management and increased employee productivity. However, the study also diluted the challenges of hybrid communication: i.e. the adaptation of new employees, the problem of receiving feedback, the abundance of e-mails and the growing social exclusion of employees, the consequences of which could be examined in other studies.*

Keywords: hybrid communication, organization development, social exclusion, productivity.

JEL Codes: D83, F63, E24, D24

1. Introduction

The hybrid work model is not new, but has become much more important in the pandemic period. However, a comprehensive understanding of how to effectively exploit the full potential of this work model is still lacking. According to Choi et al. (2021), "over the past sixty years, organisations in Europe, the United States, Japan and elsewhere have experimented with the hybrid work model", which has been shaped by the relatively rapid advances in technology, but whose development was affected by the COVID-19 pandemic. According to Loia and Adinolfi (2021), during the COVID-19 pandemic, this model of work enabled organisations to plan, manage and continue business activities in a targeted manner. Choi et al. (2021) investigated the methods and characteristics of the hybrid work model, showing that the latter are strongly associated with employees' emotional security and satisfaction. The study of Grzegorzczuk et al. (2021) suggests that the hybrid work model may eventually become the dominant work model. Baker (2021), studying the potential of the hybrid work model to replace the contact work model, found that the hybrid

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work model is superior when considering economic, social and sustainability aspects. Although the Hybrid work model has only recently been widely adopted, there is already a strong interest from organisations in this model of internal organisation. It is believed that the Hybrid work model is likely to persist in many organisations and industries beyond the pandemic (Driggs & Southern, 2021).

Investigation problem. The newly formed model of hybrid work forced the search for new methods of information dissemination that would ensure the effective implementation of the desired business development goals. However, a problematic question arises: how does hybrid communication contribute to organisation development in Lithuania?

The purpose of the article is to determine the features of hybrid communication when applied to business development in Lithuania.

Research methods: To examine the research problem, an analysis of scientific sources is performed and a quantitative research method - an online questionnaire survey. Descriptive statistics methods are used for data analysis.

2. Literature review

Hybrid communication can be described as mixed communication, both live, face-to-face communication and communication via remote means (Zoom, Google Meets, etc.) (Bielinis, 2020). The authors (Khan, Qureshi, & Khanzada, 2019) argue that hybrid communication is a composite way of communicating that allows for both live and remote communication. Different foreign authors define the hybrid work model as a flexible and reasonable combination of remote and face-to-face working models, which helps to organise, execute and control organisational processes or activities in a proper way (see Table 1).

Table 1: Understanding the specifics of the hybrid work model

Author	Concept of hybrid work model	Emphasis on hybrid aspect of the working model
Grzegorzcyk et al. (2021)	Hybrid work model is a flexible combination of teleworking and face-to-face working models	Flexible combination of approaches
Brown (2021)	Hybrid work model is the execution of an organisation's functions, processes and activities through a combination of teleworking and face-to-face working models	Delivering the functions, processes and activities of the organisation by combining different working methods
Bloom (2021)	Hybrid work model allows the combination of the main advantages of teleworking and face-to-face working methods	Provides the opportunity to combine the advantages of different approaches
Choi et al. (2021)	Hybrid work refers to flexible working arrangements in which the worker's work location and/or hours are not strictly defined.	Flexible working hours

(Source: compiled by the authors)

The academic literature highlights the importance of digital technologies in the context of the hybrid working model. Grincevičienė (2020), focusing more on teleworking, argues that the development of communication and information technologies has led to the renewal and modernisation of business management processes, enabling the successful completion of assigned tasks remotely (Grincevičienė, 2020). This suggests that in the context of the hybrid work model, digital information and communication technologies are particularly significant. The latter enable consistent internal communication, help to manage

employees' activities and achieve desired organisational goals when some employees work remotely and others through contact. It is therefore important for organisations with a history of contact-based working to properly prepare their staff and develop their computer literacy skills.

Communication skills in business are the way in which employees or partners communicate and discuss. Communication skills are an essential component in order to share information, such as requirements, plans, etc., with each other so that everyone works together. In order for a company to grow, it is essential that employees, partners and customers communicate and collaborate well (Schafer, Faehnrich, 2020). Verbal, listening, written, body language and visual communication skills are important elements of interaction (Holtzhausen et al., 2021). The following table (see Table 2) shows the verbal, non-verbal and visual communication channels. These are the channels that allow the message to be conveyed and addressed to the recipient in appropriate and desirable ways.

Table 2: Communication channels

Verbal communication channels	Written communication channels	Visual communication channels
Meetings	Invitations	Presentations
Conferences	Letters	Infographics
Hybrid Conversations	Reports	Charts
Chat (live)	Newsletters	Figures
Calls	Internet	Tables
Teleconferences	Advertising	Reports
Video conferencing	Email	Maps

(Source: compiled by the authors according to Hawrysz, Hys (2014))

Hybrid communication consists of: synchronous and asynchronous communication. It is the different communication planes of hybrid communication that make it possible to ensure a coherent and functional operation.

Synchronous communication takes place in real time and is designed to provide an immediate response, i.e. to react. Most of the communication that takes place in normal office conditions is synchronous. However, with mixed teams, synchronous communication is somewhat more difficult and usually involves additional planning and communication. Examples of synchronous communication vary (see Figure 1). It should be noted that verbal and non-verbal communication is also crucial in face-to-face communication, which allows for the expression of different emotions (Burgoon et al., 2016).

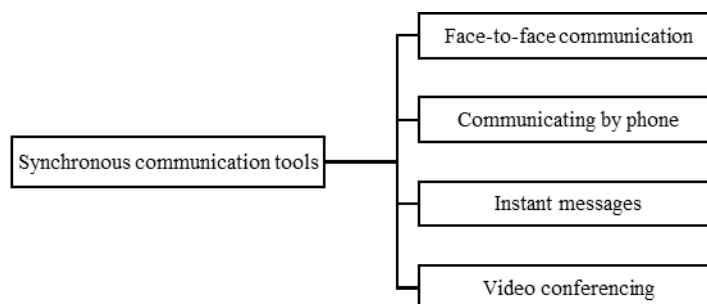


Fig. 1: Synchronous communication tools

(Source: compiled by the authors according to Khan, Qureshi, Khanzada, 2019)

Synchronous communication can help remote and mixed teams that rarely meet in person to build trust and intimacy. This can go a long way in creating a sense of belonging and making employees feel connected to other employees, which promotes the growth and improvement of organisational culture (Kahn, Qureshi, & Khanzada, 2019).

Asynchronous communication does not usually take place in real time, given that there is a time difference between the person providing the information and the person receiving it. When it comes to remote and hybrid teams, they are likely to thrive with this type of communication, but it is usually suitable for work in office setting as well (Bielinis, 2020).

Asynchronous communication is great for relieving the pressure to respond immediately to messages or emails. Employees tend to value the time they can spend on generating the right response rather than automatically responding to important questions and requests. The benefits of asynchronous communication are different (Khan, Qureshi, & Khanzada, 2019):

- Statement of clear and realistic communication expectations.
- Providing reasonable and thoughtful responses.
- It is convenient for people who are reluctant to communicate.

In essence, the hybrid working model was designed to allow employees to choose where to work from. Some days they can work from the office and other days from their home. Based on this, we can identify five models of hybrid communication (see Figure 2).

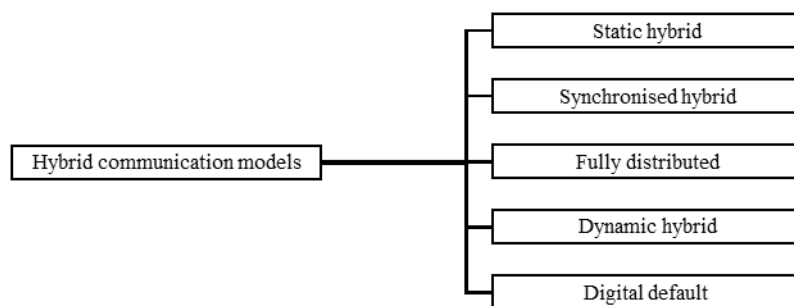


Fig. 2: Hybrid communication models
 (Source: compiled by the authors according to Khan, Qureshi, Khanzada, 2019)

Static hybrid: with this model, each team member has a fixed workspace in the office or at home. Dynamic hybrid: employees can decide where they want to work, in the office or remotely. Synchronized hybrid: team members work remotely and in the office, but come to the office at the same time. Default digital: with this working model, employees can work wherever they want, without any expectations. This model is sometimes referred to as the remote management model. Fully distributed: is essentially what some call completely remote (Khan, Qureshi, Khanzada, 2019)

According to Alexander, De Smet and Mysore (2020), the effective combination of teleworking and face-to-face models is indeed a very complex process. This suggests that a comprehensive understanding of how to effectively exploit the potential of the hybrid working model is still lacking, and that organisations adopting the new internal organisation model face challenges in selecting the right approaches. According to Choi et al. (2021), the most effective approaches to hybrid working are expected to evolve in the coming years, and organisations are now obliged to take responsibility for identifying the most appropriate approaches on an individual basis: deciding which employees should work in a contact-based way, why and

when, and under what circumstances they should work remotely (Choi et al., 2021). This suggests that organisations seeking to adopt a hybrid work model are applying work organisation methods based on uncertain conditions.

However, while there are no valid and clearly identified hybrid working model approaches to ensure effective organisation and management, Choi et al. (2021) have identified steps to facilitate the development of tailored approaches to identify the most effective hybrid working practices:

1. It is valuable to assess the feasibility of a hybrid working model based on a flexible, holistic and open approach to the members of the organisation, considering them as a whole and as individuals.
2. Hybrid working model approaches should be shaped by the organisational culture, the form of governance chosen and the opportunities for information transfer.
3. The methods of the hybrid working model should be designed around the needs of the employees. In the search for the most appropriate working methods, it would be important to move away from hierarchical decision-making practices and to allow each employee to combine contact and teleworking patterns or working hours according to individual needs. According to the authors, this practice would lead to more sustainable approaches to the hybrid working model (Choi et al., 2021).

Grzegorzczuk et al. (2021) describe the process in a very similar way. According to the authors, hybrid working model approaches should be identified and applied by mutual agreement between management and employees. A joint assessment of employees' personal needs and the nature of their work should shape the most effective methods for combining flexible teleworking and contact working models to help ensure the organisation's purposeful performance (Grzegorzczuk et al., 2021). Bloom (2021) puts the process of selecting hybrid working model approaches in a slightly different light, arguing that these choices should be based on managerial insights that allow for an appropriate balance between the advantages of teleworking and contact working methods, ensuring systematic change management, a purposeful organisational culture and a smooth information transfer process (Bloom, 2021, p. 1). Thus, the lack of clear and valid approaches to the hybrid working model obliges organisations to look for the most effective ways of organising their internal business operations.

Study of Xie et al. (2018) revealed particularly dynamic characteristics of the hybrid working model: the hybrid working model has no clear boundaries, it allows for contact or remote working, tasks are routinely interrupted by extraneous factors, and there is a marked desire to meet the objectives of multiple tasks simultaneously, which fosters the need for the ability to prioritise activities appropriately, however, the increased practice of simultaneous multi-tasking may reduce staff's commitment to their professional activities, lead to emotional and even physical fatigue, and an increased need for continuous learning, new knowledge and skills to make good use of the latest technologies. In their study, the authors identified the main characteristics of the hybrid working model and their relationship to employees' attitudes towards work and overall well-being (see Figure 3). The authors highlight that the hybrid work model is a work model with a unique, distinctive design, which is still not sufficiently analysed in the literature (Xie et al., 2018).

According to Xie et al. (2018), the original hypotheses - the characteristics of hybrid work - were partially confirmed by the study. The absence of clear boundaries does have a negative impact on employees' well-being, but nevertheless the data did not reveal either a positive or a negative impact on employees' attitudes towards work. The pursuit of multiple objectives at the same time, as predicted, also has a negative impact on employee well-being, but the results obtained could again neither disprove nor confirm the hypothesis that this element has a negative impact on employee attitudes, as the results were equal. The need for continuous learning is indeed linked to professional commitment and organisational satisfaction, but

again did not reveal a clear link with employee well-being. Non-work-related disturbances indeed confirmed the original hypotheses and negatively affect employee well-being and attitudes (Xie et al., 2018).

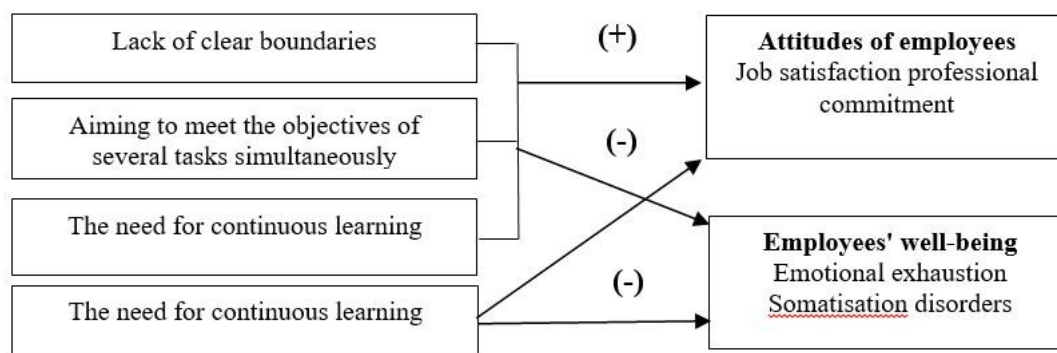


Fig. 3: Hypothetical characteristics of the hybrid work model
 (Source: Xie et al., 2018)

The newly emerged hybrid model of work in organisations has also become a challenge for consistent information dissemination. It has forced the search for new communication methods and channels to ensure purposeful internal communication and successful business operations. The importance of internal communication has consistently increased in organisations newly adopting the hybrid working model, as organisations focus more on information dissemination processes in order to effectively control new performance management challenges (Summerfield, 2022). This suggests that the introduction of a hybrid working model requires a greater focus on optimising information dissemination processes. Also, according to Choi et al. (2021), the new working model encourages the search for new information transfer practices to maintain the consistency of internal communication and to ensure the effectiveness and quality of the message sent. Thus, the hybrid work model encourages the identification, development and application of new internal communication practices that help to effectively communicate the desired messages to employees. According to Singh (2015) and Field (2021), internal communication in an organisation is the continuous and consistent dissemination of information that all members of the organisation inevitably encounter. Significant information is shared between employees, different departments, divisions, etc. (Pirjol & Radomir, 2017; Pažeraitė & Repovienė, 2018; Oviedo, 2019). According to Itiveh and Gbemudu (2016), internal communication is not only the only means of communicating desired information, but it is also one of the key elements of business management on which effective performance achievement depends (Itiveh & Gbemudu, 2016). Similarly, Singh (2015) describes the essence of internal communication, stating that it is an extremely significant process without which an organisation would not be able to perform successfully and would eventually fail.

Jakubiec (2019) identifies six key elements that influence the development of internal communication ethics and practices in an organisation: the chosen organisational governance structure, the organisational culture, the organisational climate, the communication skills of managers and employees, and the interpersonal relationships within the team. According to Jakubiec (2019), it is important to emphasise that these elements provide the basis for individual assumptions of internal communication effectiveness, which

help each organisation to make the right choice of information transmission channels and communication tone.

A clear understanding of the functions of internal communication helps to understand the importance of effective and targeted internal communication for an organisation. Internal communication in an organisation helps to ensure purposeful organisation and control of employee performance (Dahlman, Heide, 2021). According to Pikturnaitė and Paužuolienė (2020), internal communication in an organisation allows employees to know their jobs, to have the opportunity to clarify information, to express their opinions freely, to express dissatisfaction, and to provide suggestions and ideas. All of these elements are crucial for the smooth functioning of employees. The analysis of scientific literature has also revealed the importance of the contribution of internal communication to the development of teamwork among the members of the organisation. According to Valo and Mikkola (2020), active discussions and periodic feedback promote teamwork. According to Slijepčević et al. (2018), employees see internal communication as an appropriate tool for solving performance problems. This suggests that information dissemination processes within an organisation help to effectively resolve emerging conflicts, challenges and problems, with reasonable and prompt follow-up helping to maintain competitive advantage, reputation and ensure targeted performance. Vora&Patra (2017) identified the key components of internal communication that help to ensure the purposeful performance of the organisation and its employees as decision-making processes, timely feedback, change management, and the continuous dissemination of information to the members of the organisation provides a sense of stability, builds employee commitment and involvement in the organisation, and helps to ensure purposeful and coordinated teamwork and the success of the goals set for it.

Maintaining internal communication methods and the tone of communication is usually the responsibility of a group of people or an individual with specific knowledge of the organisation's information processes. According to Field (2021), managers of organisations need to make an informed decision on how the dissemination of information should be managed and controlled, either by forming a separate communication department or by appointing a responsible person with the necessary skills.

It is also important to note that the hybrid working model has led to the emergence of new information dissemination practices in the digital space. It has become the most widely used tool for communicating messages to staff working in different locations. According to Halford (2005), in organisations with a hybrid working model, the desired information is routinely shared in the digital space. This suggests that digital communication platforms allow the desired information to be shared directly, quickly and efficiently with employees. However, it is clear that the need for live contact communication remains. When choosing communication channels, it is important to consider the purpose of the message to be sent, which can sometimes be more effectively achieved through face-to-face meetings.

The need for live contact communication in the hybrid working model is also highlighted in the scientific literature, where foreign authors have highlighted the importance of this communication channel. According to Alexander et al. (2020), the choice of communication channels in an organisation should be based on the main purpose of the message. For example, e-mail is a significant way of communicating information that would take a little more time to process properly. However, in order to properly resolve organisational problems or to discuss issues such as possible promotions, salaries, performance, etc., a contact meeting should be organised on the premises of the organisation, as this will help to properly understand the sender's and receiver's intentions, possible responses and to control the rhythm of the conversation. Thus, Alexander et al. (2020) argue that, despite active internal communication in the digital environment, organisations adopting a hybrid working model should focus more on live contact. The authors highlighted the main advantages of live contact in organisations adopting hybrid working approaches:

- Informal contact is established.
- Staff trust is built.
- Cooperation towards common goals is strengthened.
- Emotionally strong interpersonal contact is established.
- Opens up a freer creative space.
- Also, a more consistent organisational culture is fostered (Alexander et al., 2020).

The fact that so many millions were or are still working from home created an accidental intimacy fueled by the fact that seeing into people's homes gave workers insights into their colleagues' lives they could never have arrived at by any other means. The Zoom universe gave permission for workers to ask each other about the children, pets, artwork, plants, and furnishings that appeared before the camera or on the audio link. This natural process created a new and different energy in many corporate settings that worked to strengthen corporate cultures within and across departmental organizations even as remote working threatened to weaken interpersonal ties traditionally nourished in shared corporate spaces and at the "water cooler" (Hirsh, 2021).

It is therefore important to emphasise that the hybrid working model also makes good use of live contact communication. This helps to ensure employee satisfaction, emotional well-being and helps to target the desired organisational performance.

The vast majority of challenges arise in the digital space, where information dissemination processes are most active. The first challenge identified by the authors concerns the growing exclusion of employees. Hybrid meetings - video calls involving employees working remotely or face-to-face. According to Bloom (2021), these types of calls increase the exclusion of employees, as remote workers can hear the extraneous conversations of their colleagues during hybrid calls, and therefore feel more excluded as they are not able to engage in extramural discussions. Also, meetings involving ten or more members of the organisation are routinely viewed negatively, as such meetings divide employees into smaller virtual rooms, which deprives them of the opportunity to assess shared verbal and non-verbal communication (Bloom, 2021). Thus, it can be argued that this internal communication practice, even if it allows all employees to be informed at the same time, is not considered to be very effective. Driggs and Southern (2021) add that the increasing isolation of employees is also shaped by the untimely dissemination of information, which is why it is particularly important to deliver meaningful messages to all employees at the same time (Driggs & Southern, 2021).

In summary, hybrid communication models allow employees to adapt and work in a way that is most acceptable and convenient for them. This can provide a wide range of benefits in terms of employee job satisfaction, organisational culture growth, employee motivation and increased productivity. The absence of valid approaches to the hybrid working model obliges organisations to critically assess the most appropriate perspectives for identifying and applying the latter, and to look for the most effective ways of organising the internal workings of the business, based on the existing form of management, organisational culture, internal communication capabilities and/or employees' personal insights. The characteristics of the hybrid working model that are linked to employee behaviour and emotional security are analysed in the literature: the absence of clear boundaries, the desire to achieve multiple objectives simultaneously, the need for continuous learning and the satisfaction of the members of the organisation.

3. Methodology

In order to present the specificities of the development of hybrid communication, it is important to take into account the context, i.e. to present the views of the people who use hybrid communication. Research method. The research method chosen is quantitative research (survey).

The survey was chosen because it provides insight into the general public's views on the use of hybrid communication (in business).

Organization and sample of the study. The sample of the study was convenient, so the respondents of the selected (n = 301) participated in it. The selection criteria for respondents are:

- The respondent must work in a business organisation that uses hybrid communication.
- The respondent must have been using hybrid communication with colleagues for at least 1 year.
- The respondent must work in a business organisation that provides services related to training/education and is located in 'X' city.

The analysis of the demographic characteristics of the respondents revealed that 201 (67%) were male and 100 (33%) female. The majority of respondents were also aged between 18 and 30 years, i.e. 45% of the participants. The remaining respondents were aged between 31 and 40 years at the time of the survey, i.e. 30% of the respondents. The age range of 41 to 50 years was 19% of the respondents. The smallest proportion of respondents were aged between 51 and 60 years at the time of the survey (4% of respondents) and over 61 years (2% of respondents).

The analysis of the income of the respondents showed that the majority of them earn between €1301 and €2000 per month (57% of the respondents). The rest of the respondents reported earning more than €2001 (20% of respondents). Between €901 and €1300 per month was reported by 18% of the respondents and between €601 and €900 by 4% of the respondents. The lowest number of respondents earned up to €600, i.e. only 1% of the respondents.

Without exception, all respondents had a university degree. This can be attributed to the fact that one of the selection criteria for the respondents was that they had, at the time of the survey, been involved in services related to education or training. The majority of the respondents had completed a non-university higher education qualification, i.e. 54% of the respondents, while the remainder of the respondents claimed to have completed a university higher education qualification (46% of the respondents).

A mixed method of distributing the questionnaires was used: a written survey and an online survey. The most effective way to collect data was to send questionnaires directly to survey participants. A total of 253 questionnaires were distributed, filled in immediately and returned to the person who conducted the survey. Also, 48 respondents responded to the online questionnaire. For further data analysis, 301 questionnaires were used, which are considered suitable for statistical analysis. The ethical principle of free choice to participate in the survey was observed during the research. The study was conducted anonymously, the results were processed and summarized, and data confidentiality was ensured. Research methods. The analytical descriptive method was used to analyse the questions of implementation of internationalization development in higher education.

Quantitative research method. Respondents were asked a total of 13 questions in the survey, divided into two groups:

1. Demographic questions (age, gender, income and education).
2. Questions related to hybrid communication (advantages of hybrid communication, ensuring work efficiency, benefits of hybrid communication for business, its development, etc.).

A questionnaire was created in order to understand the specificities of the development of hybrid communication, it is important to take into account the context, i.e. to provide the views of those who use hybrid communication. The questionnaire was constructed on the basis of theoretical insights, criteria selected in the scientific literature, based on which hybrid communication methods purposes were studied, factors determining hybrid communication in the company, and reasons limiting hybrid communication method usage. The validity and reliability of the questionnaire were determined by calculating Cronbach's alpha values for each group of statements in the questionnaire. The results of the statistical analysis show that the group of statements in the questionnaire on the benefits of hybrid communication has a sufficiently high internal compatibility rate (Cronbach's alpha) ranging from 0.841 to 0.851, except for the statement with a negative value of Cronbach's alpha = 0.774; therefore, this statement is analysed as a separate variable.

After checking the internal consistency of the statement of hybrid communication pitfalls, Cronbach's alpha = 0.8639 was calculated and ranged from 0.8479 to 0.8702. In defining the main reasons for non- usage hybrid communication in the company, the aim is to test several constructs in this regard. For this purpose, the analysis of principal component factors using a Varimax rotation was performed. The results show that the data are suitable for factor analysis: KMO = 0.793 (possible KMO not less than 0.6), and Bartlett specificity test $p < 0.001$. The results of the factor analysis show that the statements in the question consist of three factors (see Table 1). Factor weights in each factor range from 0.41 to 0.791. The calculated internal degree of agreement (Cronbach alpha) for each factor and the number of statements are presented in Table 3.

Based on the fact that internal consistency should be between 0 and 1, and a Cronbach's alpha of 0.60 is considered suitable for research (Pakalniškienė, 2012), the Cronbach's alpha calculated in this study indicates that the groups of statements in the question should be considered compatible.

Table 3: Reasons for Hybrid Communication in the Organisations Development

Factors	Number of statements	Cronbach alpha
Hybrid communication advantages	6	0.637
Hybrid communication interference	6	0.806
Hybrid communication potential	4	0.652

Statistical research method. Statistical analysis methods were used to process the data collected during the study: calculations of percentage frequencies and statistical averages. Statistical analysis of the data was performed using the data package of SPSS software version 17.

4. Research results and discussion

In order to find out the peculiarities of the development of hybrid communication, respondents meeting the criteria presented in the methodological part of the paper were interviewed. Respondents were asked a total of 13 questions.

The analysis of the survey data showed that the majority of respondents use hybrid communication very often (71% of the survey participants). The other respondents stated that they use hybrid communication frequently, 24% of respondents, and the remaining 5% of respondents neither frequently nor rarely. In summary, the respondents used hybrid communication very often, which suggests that they use hybrid communication frequently and that they can answer the other research questions adequately.

To determine the appropriate and preferred ways of delivering and addressing the message to the recipient as presented in the theoretical part of the study, the study sought to find out which hybrid communication channels are used by respondents.

While analysing the data (see Figure 4), it can be said that respondents mainly use telecommunication platforms such as Zoom, Google meet, Microsoft Teams (26% of respondents). 25% of the respondents stated that they use calls most often, while video conferencing is used by 24% of the respondents and email by 19% of the respondents. It should be noted that respondents do not choose SMS as a frequent channel of communication (only 6% of respondents).

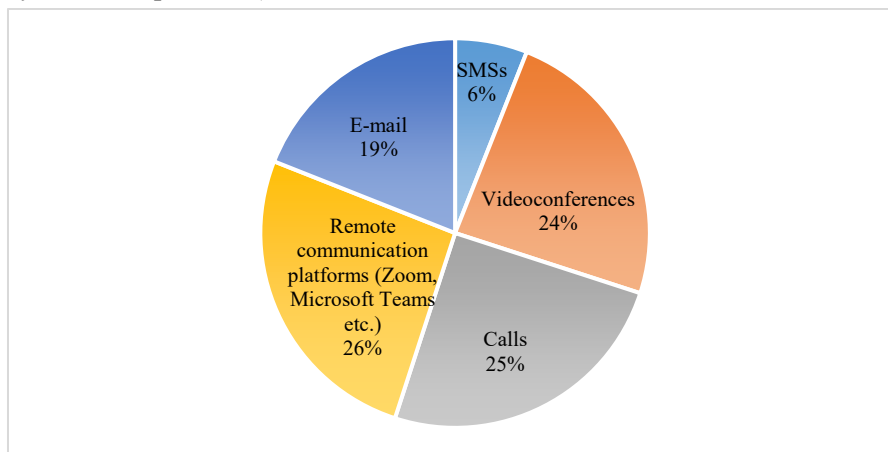


Fig. 4: Hybrid communication channels

The survey sought to find out whether the respondents' company had received any training on safety when working remotely before the introduction of hybrid communication. It was found that the majority of respondents reported that their company had received training in teleworking safety - 89% of the respondents - while 11% reported that their company had not received such training. The next question sought to find out the advantages of hybrid communication (see Figure 5).

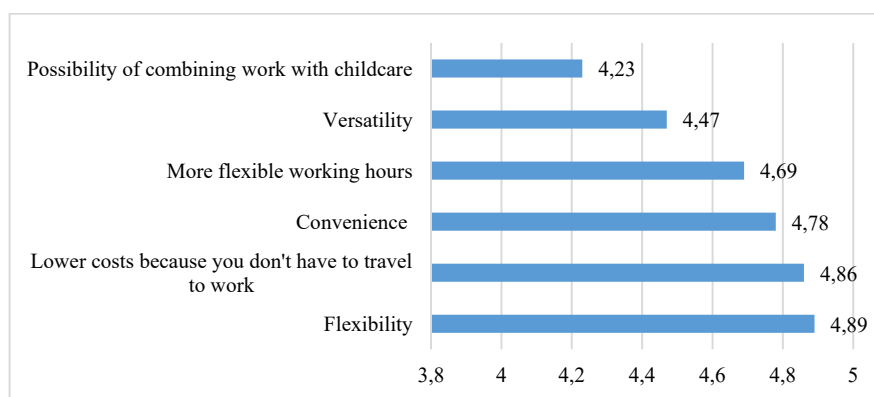


Fig. 5: Advantages of hybrid communication, average of responses

Hybrid communication was found to have a number of distinct advantages according to respondents. The biggest advantage was flexibility (average of 4.89 responses). Flexibility allows for other advantages, the most important of which, according to respondents, is the reduction in costs due to the lack of commuting (4.86). There is also convenience (4.78) and usually a more relaxed working schedule (4.69) and the possibility to combine work with childcare (4.23). In summary, hybrid communication can save material and time resources and help you to plan your working day better.

The study aimed not only to identify the benefits of hybrid communication for employees, but also to find out the motives that drive businesses/employers to use hybrid communication. Thus, it was found that businesses use hybrid communication because they want to adapt to the changing business environment (91% of respondents). Others stated that businesses want to be innovative (75% of respondents) and that hybrid communication results in lower costs for workplace facilities (87% of respondents). Hybrid communication is also used to adapt to the needs of employees (55%) and can also be used when there is a shortage of office space (45%). In summary, businesses use hybrid communication to adapt to the changing business environment, to save money and to be innovative. It is believed that the wider adoption of hybrid communication due to the limitations of the Covid-19 pandemic has taught employees to work from home and many are now used to this change.

In addition to identifying the benefits of hybrid communication, the survey also sought to identify the disadvantages that respondents experience when using hybrid communication (see Figure 6).

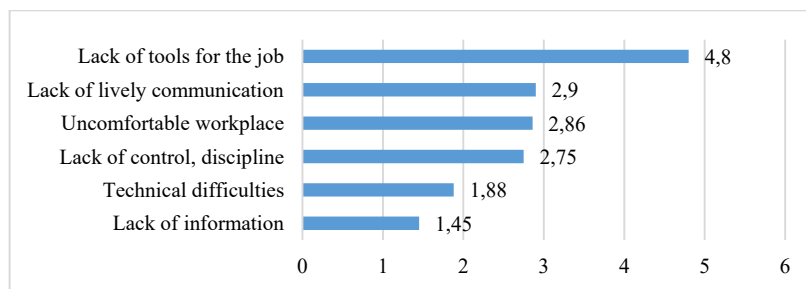


Fig. 6: Measures to extend the use of hybrid communication, average

The analysis of the data shows that the biggest inconvenience that emerged from the use of hybrid communication was the lack of tools needed for work (4.80 points). Others said that there was sometimes a lack of lively communication (2.90 points) and having to work in an uncomfortable workplace (2.86 points), and that respondents sometimes felt a lack of control and discipline (2.75 points). Nevertheless, respondents rarely felt a lack of information when using hybrid communication (1.45 points) and did not have to deal with technical difficulties (1.88 points).

Finally, the aim was to find out what tools could be used to expand the use of hybrid communication in the future (see Figure 7).

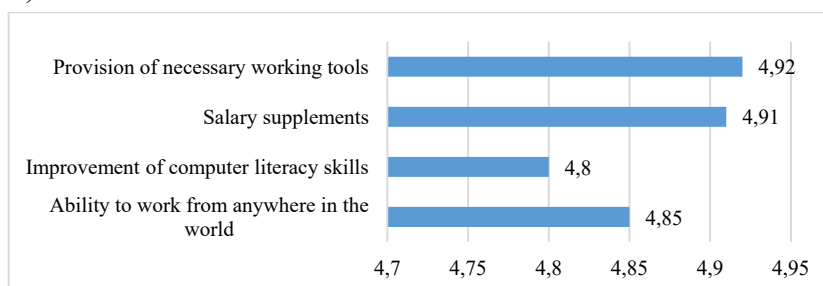


Fig. 7: Measures to extend the use of hybrid communication, average

The analysis of the data suggests that the means to expand the use of hybrid communication would primarily be salary supplements (4.92 responses average) and the provision of the necessary working tools (4.91 responses average). It should also be possible to work from anywhere in the world (4.87 average) and meet the need to improve computer literacy skills (4.87 average).

To summarise the study, we can say that the subjects used hybrid communication very often and that hybrid communication can help them to save material and time resources, and to organise their working day more appropriately. Businesses use hybrid communication in order to adapt to the changing business environment, to save money and to be innovative. Hybrid communication can continue to be used because it can save time and financial resources.

5. Conclusions

To summarise, hybrid communication is a mixed communication method that allows members of an organisation to communicate from different locations and to communicate 24/7. Hybrid communication enables employees to work remotely, live and in a hybrid way. The most important thing is that the employee is able to carry out the tasks and jobs assigned to him/her properly.

The hybrid working model can be defined as an internal activities organisation model that allows for a flexible combination of teleworking and face-to-face working patterns and/or working hours, but specific working methods for the successful application of the hybrid working model do not currently exist. The identified characteristics of the hybrid working model are directly linked to the behaviour and general well-being of the members of the organisation and emotional security.

The analysis of the scientific literature has allowed us to assess the impact of the hybrid working model on internal communication: it has led to the emergence of new internal communication practices in the digital space, the conscious application of which allows for the targeted sharing of desired information. However, the lack of live meetings, untimely information and the abundance of remote meetings can increase exclusion and isolation among employees. It is therefore essential to choose the communication channels wisely and to combine them in a targeted way, taking into account the purpose of the message to be sent.

The study found that the subjects used hybrid communication a lot and that it can save not only time but also financial resources. Businesses use hybrid communication in order to adapt to the changing business environment, to save money and to be innovative.

The most commonly used hybrid communication channels have been found to be remote communication platforms and calls and video conferencing. However, it was found that communication through these channels was hampered by a lack of tools for the job. In addition, respondents sometimes lacked live communication. Nevertheless, respondents rarely felt a lack of information when using hybrid communication and did not encounter technical difficulties.

The study helped to answer the research problem raised in the paper and the data confirms that businesses can not only use hybrid communication but also expand it by providing employees with additional monetary incentives and the necessary tools.

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The Economy of Retail Chains in the FMCG Sector: The Case of Czechia

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Abstract. *The article deals with the analysis of the economy of the largest retail chains operating in the highly competitive Fast-Moving Consumer Goods market in the Czech Republic; the analysis of the relationships between selected economic indicators and key national economic variables. This research used data from annual reports and the audited financial statements of firms operating individual retail chains from 2005 to 2020. The research includes nine commercial companies and focuses on the development of sales, costs and cost ratios, profit and profitability, and assets and resources. The relationships between the indicators are evaluated using correlation analysis, and the similarity of trade chains using cluster analysis. From the point of view of retail formats, discounters are particularly successful, which, together with medium-sized supermarkets, are growing at the expense of hypermarkets and large supermarkets. Success and dominance in the Czech market are related to high labour productivity and low unit costs. The combination of price promotions and a wide range of private products, characteristic of discount chains, is very attractive to customers and, together with low unit costs, creates the potential for increasing the market share of discounters. Hypermarkets and large supermarkets will face further stagnation and pressure to downsize stores, automate and use other cost-cutting methods. The article brings new insights into the economics of FMCG chains operating in the Czech market, emphasising the differences between trade formats in perspective from 2005.*

Keywords: FMCG, retail, analysis, sales, costs, profit

JEL Codes: L81

1. Introduction

Like other countries, the Czech Republic has been affected by the wave of internationalization and globalization in retailing. Major retail chains are expanding their retail strategies and activities. The Fast-Moving Consumer Goods (FMCG) sector in the Czech Republic underwent a transformation in the 1990s, during which a sharp expansion of multinational business chains increased their market share. The expansion of international retail chains was manifested in the rapid growth of the number of their stores, turnover and dominant position in the market. By around 2000, these chains represented about 70% of the total retail turnover in the country (Šimová, 2010).

According to data from the company Growth from Knowledge, the number of stores of multinational food chains with a sales area of more than 400 m² in the Czech Republic has increased by 14% in the last ten years. At the end of 2021, 1618 such stores were operating in the Czech Republic, of which 737 were discount stores, 556 were supermarkets, and 325 were hypermarkets. It is assumed that this trend will continue in the coming years, as even the pandemic has not affected the expansion plans of retail chains. In

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2021, 56 new hypermarkets, supermarkets and discount stores were opened in the Czech Republic, the most in the last ten years (RetailNews, 2022).

2. Research Elaboration

2.1. Theoretical Background

Fast-Moving Consumer Goods are non-durable retail products that cover the daily needs of consumers, constitute a large part of the consumer budget in all countries, are usually cheaper and have a shorter lifespan (Groot & Musters, 2005; Kuzmina et al., 2019). In economically developed countries, the intensity of competition in recent years has caused the short lifespan of innovation and difficulty in maintaining the traditional theories of retail development, so retail must provide not only low price and quality but also convenience and brand value (Dholakia et al., 2018). Newer formats such as discounters, supermarkets, and hypermarkets have expanded food consumption options and disrupted traditional food retail formats worldwide, posing a challenge to traditional format retailers (Bonfrer et al., 2022).

A retailer can target customers based on location, services provided, low prices, or the appeal and quality of the product range (Inoni & Okorie, 2022). Currently, location advantage is diminishing, and services are rarely a source of a sustainable advantage, especially in the context of intense price competition. In other words, a long-term sustainable and profitable consumer offer is created by the price and assortment of products (Corstjens et al., 1995). Price changes receive much attention for their immediate impact on sales and profits (Mercer, 1993; Bucklin & Gupta, 1999; Pauler & Dick, 2006; Casado & Ferrer, 2013). Every brand tries to attract the consumer's attention with advertisements and price promotions. Consequently, the market is characterised by strong sales peaks caused by promotions (Groot & Musters, 2005).

Trends in retail strategies are driven mainly by changes in consumer preferences and purchasing behaviour. Increasingly, sustainability goals are integrated with profit and sales growth goals. Sustainability is a competitive imperative that goes beyond simply improving a marketer's image. It can differentiate a brand from its competitors, improve brand equity, build customer loyalty, and attract younger consumers (Vadakkapatt et al., 2021).

Many studies have looked at consumer store selection and have attempted to rationalise choice according to multiple attributes such as general shopping patterns, store attitudes, household demographics and situational factors (Arnold et al., 1983; Burke et al., 1992; Darden et al., 1981; Dawson et al., 1990; Van Kenhove et al., 1999; Bhatnagar & Ratchford, 2004; Tian et al., 2021; Kumar & Venkatesan, 2021; Gauri et al., 2021). Despite the mixed findings on the effects of supermarket influence on small retail stores, continued growth in retail size is the dominant trend (Chung et al., 2022).

The impacts of economic indicators and the interrelationships between retail forms (hypermarkets, supermarkets, discounts, convenience stores) and competing firms can help reveal managerial insights and estimate the balance of the sale so that future changes in the market can be predicted (Wang, 2022). E.g., Gauri (2013) found, using the stochastic frontier method, that stores with a larger sales area, more checkout counters, and stores located closer to competitors had the highest efficiency.

The goal of this research is to analyse the economy of the largest retail chains operating in the highly competitive FMCG market in Czechia, an analysis of the relationships between selected economic indicators and key national economic variables. The subject of the research is not only individual retail chains but also the entire group of the largest retail chains, representing a decisive part of the retail market.

2.2. Data and Methods

This research used data from the annual reports and audited financial statements of business firms operating individual retail chains from 2005 to 2020. The research includes seven commercial companies – Lidl Česká republika v.o.s., Kaufland Česká republika v.o.s., Albert Česká republika, s.r.o., Penny Market s.r.o., Tesco Stores ČR a.s., BILLA, spol. s r. o., Globus ČR, v.o.s. In addition, DELVITA a.s. and SPAR Česká obchodní společnost s.r.o. were also included in the research but have left the market (table 1). In all cases, these are chains of stores of foreign ownership. In Table 1 they are sorted according to total sales in 2020 in descending order. The market share column expresses the share of sales for goods of the given chain to sales of goods in the retail sector with a predominance of food, beverages, and tobacco products in non-specialized stores (CZ-NACE 47.11) in 2020 (CZSO, 2022). These seven chains generate 72.6% of the industry's sales.

Table 1: Retail chains operating in Czechia

Retail chain	Owner	Residency	Number of stores*	Market share (%)
Lidl	Schwarz Gruppe	Germany	281	16.3
Albert	Ahold Delhaize	Netherlands	88 hypermarkets 240 supermarkets	13.0
Kaufland	Schwarz Gruppe	Germany	135	12.9
Penny Market	Rewe	Germany	396	9.3
Tesco	Tesco PLC	Great Britain	79 hypermarkets 9 hypermarkets Extra 59 supermarkets 38 Express	8.9
Billa	Rewe	Germany	Billa 240 Billa stop & shop 70	7.0
Globus	Globus SB-Warenhaus Holding	Germany	Globus 15, Globus Fresh 1	5.1
Delvita	Delhaize, took over by Billa in 2007.	Belgium	0	
Interspar	Spar, took over by Ahold in 2014.	Austria	0	

(Source: www.penze.cz; Note: *October 2021)

As part of the analysis of the main economic indicators of the mentioned companies, we focused on the development of sales, costs and cost ratios, profit and profitability, as well as assets and resources. For the analysis of profitability and cost ratios, the fundamental ratio indicators of financial analysis were used (Giroux, 2003; Peterson & Fabozzi, 2006). For indicators expressed in constant prices of 2005, the average annual inflation rate was used (CZSO, 2021). The relation between the development of the indicators of the FMCG sector and national economic variables was evaluated using the Pearson correlation coefficient (Rencher, 2002).

The evaluation of individual economic indicators is followed by multidimensional cluster analysis, which helps to identify similar objects. The group under investigation is therefore divided into smaller and more homogeneous groups. Ward's method was used in this article. Ward's method joins two clusters, A and B, for which there is a minimum increase in the sum of squared errors (Rencher, 2002),

$$I_{AB} = \frac{n_A n_B}{n_A + n_B} (\bar{y}_A - \bar{y}_B)^T (\bar{y}_A - \bar{y}_B) \quad (1)$$

where n_A, n_B are the numbers of objects in A, B ; and $\bar{y}_A, \bar{y}_B$ are centroids of A and B , respectively. As a distance function, Euclidean distance is used to measure the distance between two vectors $\mathbf{x} = (x_1, x_2, \dots, x_p)^T$ and $\mathbf{y} = (y_1, y_2, \dots, y_p)^T$.

3. Results and Discussions

3.1. Sales

The sales revenue of the largest retail chains increased from the value of CZK 140.47 billion achieved in 2005 to CZK 324.83 billion in 2020. In constant 2005 prices, sales for goods increased to 238.41 billion CZK, i.e., by 69.7%. Lidl Česká republika, which operates a chain of discount stores, achieved the most significant increase in sales for goods at fixed prices, followed by BILLA (supermarket chain) and the Penny Market (discount chain). The only chain that experienced a decline in the monitored period was Globus (hypermarket chain), whose sales of goods decreased by 3.03% at constant prices. The greatest dynamics of growth in sales of goods and market share were achieved by discount chains, whose sales of goods at constant prices increased by 252.2% compared to other chains, whose aggregate sales of goods at constant prices increased by only 32.4 %. The share of discount chains in the sales of the entire group of the largest retail chains more than doubled from 17% in 2005 to 35.3% in 2020. The growth in sales of goods of BILLA was significantly supported by the acquisition of the stores of DELVITA in 2008. Interspar hypermarkets became part of the Albert chain in 2015.

The highest labour productivity, measured as sales per employee, is achieved by the discount chains Lidl (CZK 8.78 million) and Penny Market (CZK 7.23 million). In contrast, the hypermarket chain Globus has the lowest (CZK 4.28 million). The highest relative increase in labour productivity occurred in the monitored period within the chains Albert (by 122.0%), Tesco (by 71.6%) and Billa (51.9%). Conversely, Penny Market (0.85%), Kaufland (12.4%) and Globus (22.7%) chains had the lowest increase in productivity (Figure 1). The increase in labour productivity in the conditions of discount chains was 16.9%, while in other chains it was 76.2%. Lidl, which has the highest labour productivity compared to other retail chains, also has the highest wage per employee. The value of the correlation coefficient ($r = 0.92$) also confirmed the close connection between the level of labour productivity and the salary of the employees of this discount chain. Tesco ($r = 0.98$), Billa ($r = 0.97$), Albert ($r = 0.97$), and Globus ($r = 0.94$) retail chains also have very high values of this correlation coefficient.

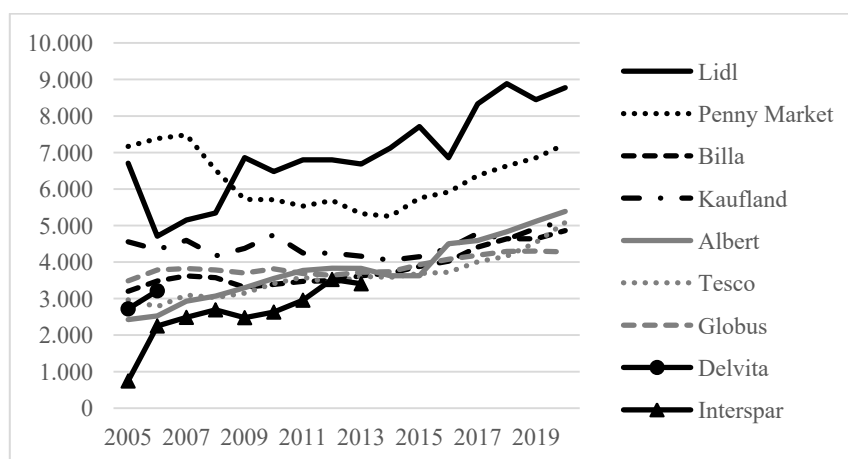


Fig. 1: Sales of goods per employee (in th. CZK)

The analysis of the relationships between sales of goods and key national economic variables showed a significant influence of the average wage, gross domestic product, and the general unemployment rate on the development of sales of goods of the largest retail chains. The value of the correlation coefficient between the sales of goods of the largest retail chains and the average wage in Czechia in the monitored period is $r = 0.98$, in the case of gross domestic product, $r = 0.97$, and the general unemployment rate $r = -0.80$. The record results of the largest retail chains in recent years were largely connected to the peak of the economy, low unemployment, and record wage growth within the Czech economy.

The success of discounters and medium-sized supermarkets and the increase in their market share compared to large formats and hypermarkets is related to the construction of new business units, among which discounters and medium-sized supermarkets predominate (for example, within new retail parks) and the change in consumer behaviour in the retail market in Czechia. Customers of discount stores and medium-sized supermarkets appreciate their availability and the possibility of quick purchases and advantageous shopping due to the high proportion of sale goods and private brands. The share of promotions and private products in these stores is higher than in hypermarkets with a comparable promotional offer and larger purchases, and at the same time, higher than in walk-in stores focused on hard-to-store fresh food and additional purchases. Large weekly purchases in large stores, which dominated the market 15 years ago, are no longer so convenient for customers and are receding into the background. The success of discounters is also the result of innovations in the design of discount stores, the marketing of discount chains, and their marketing communications.

With the rapid development of e-shops in the field of FMCG, which accelerated during the covid-19 pandemic, some customers today have the option of buying food online with delivery to their homes or, for example, to work. This will save customers time and the cost of a trip to the store. The development of e-shops, dominated by larger purchases that customers combine with additional purchases in local or specialized stores, mainly threatens stores focused on large weekly purchases. Some previously very successful hypermarkets and stores with large sales volumes are struggling in the changing market conditions with stagnation or even a decline in the number of active customers and sales.

The sales of products and services play an important role in the Czech FMCG market. The majority of retail chains show significant sales of products and services, mainly representing bonuses, fees, marketing support and other services charged to suppliers in connection with the sale of goods supplied by them. These payments are closely related to the purchase prices of goods and the trade margin achieved. This was confirmed in 2016 and 2017 after the amendment of the Act On Significant Market Power in the sale of agricultural and food products and its abuse when there was a significant decrease in sales of products and services for smaller retail chains and a significant increase in the value of the trade margin. The level of use of bonuses, marketing support and fees in relation to suppliers of goods varies significantly between individual retail chains. While the market leader Lidl's share of sales of products and services in total sales is minimal (0.14%), for the second largest chain (Kaufland), it was still more than 8% in 2020.

3.2. Trade margin

The services paid to retail chains by suppliers in connection with the sale of goods also make it difficult to compare the value of the trade margin between particular chains. The value of the trade margin of the largest retail chains increased from 19.5% in 2005 to 26.7% in 2020 (Figure 2). The lowest trade margins are shown by the chains Penny Market (23.2%), Billa (24.9%) and Kaufland (25.8%). The fair value of Kaufland's trading margin, which has the highest share of sales of products and services in total sales, is likely to be higher. An auxiliary calculation of the trade margin from the total sales indicates that the discount chain Lidl had a lower trade margin in a mutual comparison of the largest chains besides Penny

Market and Billa, where the share of sales of products and services in the total sales is minimal. Lidl's purchasing strategy, based on net purchase prices with a low share of sales of products and services, which enables transparent and efficient pricing, is one of the market leader's competitive advantages.

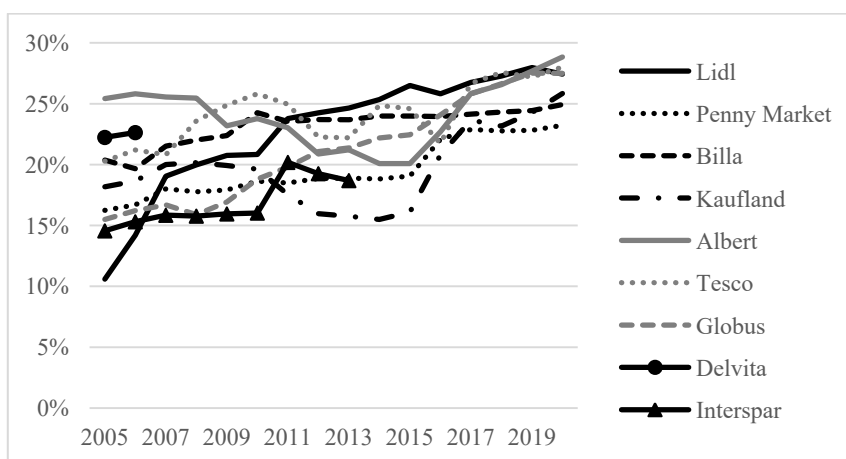


Fig. 2: Trade margin

3.3. Costs

The share of the costs of material and energy consumption and services in sales of goods decreased from 13.45 to 12.66% in the monitored period. The mutual ratio of material and energy consumption and service costs varies significantly between individual chains. To compare these costs between individual chains, it is, therefore, more appropriate to use the aggregate value of material and energy consumption and service costs as a share in the sales of goods. Discount chains Lidl (9.4%), Penny Market (10.4%) and supermarket chain Billa (11.2%) have the lowest share of this ratio. The Kaufland (15.5%), Globus (15.5%) and Tesco (14.8%), which operate supermarkets and hypermarkets, have the highest share of these costs in sales. A significant increase in costs and their share in the sales of goods occurred in the personnel costs. The value of this indicator for the entire group of the largest retail chains increased from 7.42% in 2005 to 9.77% in 2020 (Figure 3). The lowest share of personnel costs in the sales of goods have the discount chains Lidl (7.49%), Penny Market (8.46%), and the Billa supermarket chain (9.83%). Globus (12.41%) and Tesco (11.86%) chains have the highest share of personnel costs in sales of goods. Personnel costs and the development of their share in sales should be monitored in connection with the development of labour productivity. Within the largest retail chains, labour productivity grew faster than the share of personnel costs in sales. The growth rate of sales per employee was 33.95% in the monitored period, while the increase in personnel costs in sales was 31.57%.

The share of personnel costs in the added value decreased from 72.25% in 2005 to 57.01% in 2020. The lowest value of the share of personnel costs and added value in 2020 were the Lidl retail chain (41.13%), Kaufland (52.71%) and Penny Market (58.42%). The highest share of personnel costs in added value was reported by the Globus chain (80.48%). For the Delvita and Interspar chains, which ceased operations during the monitored period, the value of this share reached significantly above the level of 100%.

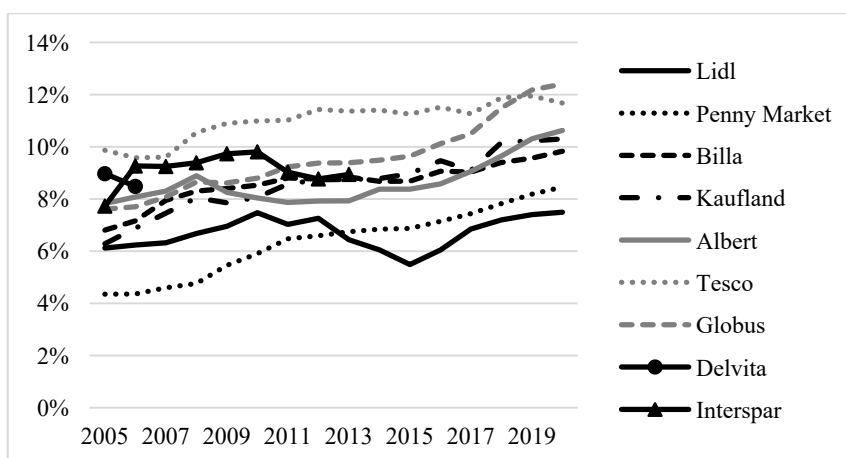


Fig. 3: Personnel costs to sales of goods ratio

The share of depreciation in the sales of goods slightly decreased from 2.71% in 2005 to 2.54% in 2020. The lowest share of depreciation in sales was the Globus chain for a long time, while the highest share had Tesco. The value of the share of depreciation in sales reflects, in addition to the amount of realized investments, also differences in the ownership of business units and other types of fixed assets between individual chains. The Tesco chain, which has the highest share of depreciation on sales, also has the highest share of fixed assets on sales. Globus, which has the lowest value of the share of depreciation in sales, together with Penny Market, has the lowest value of the share of fixed assets in sales. These two chains also show the highest difference between the net and gross value of fixed assets.

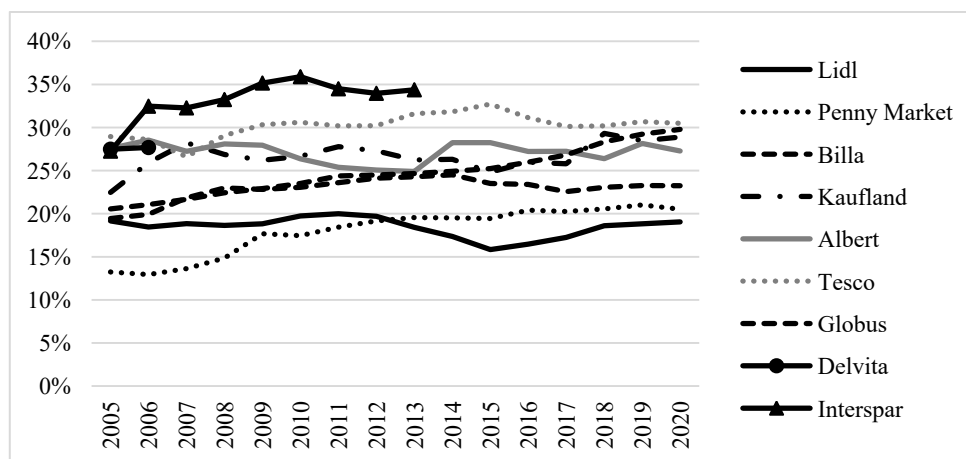


Fig. 4: Aggregated costs to sales of goods

A comparison of the share of aggregated costs (material and energy consumption, service costs, personnel costs, and depreciation) in sales of goods (aggregated cost ratio) confirms significant differences between particular chains and formats of retail stores. Lidl (19.05%) and Penny Market (20.53%) discount chains have the lowest aggregated cost ratio (Figure 4). The aggregate cost ratio of Lidl has hardly changed from a long-term perspective. In the case of Penny Market, there has been a significant increase since 2005 from the original very low value of 13.04%. The Billa supermarket chain also achieves low values of the aggregate cost ratio (23.16%). On the other hand, the highest costs ratios were in the chains Tesco (30.49%) and Globus (29.92%). While in the case of the Tesco chain, costs have been high for a long time, and in the

case of the Globus hypermarket chain, the aggregate cost ratio has increased by 45.6% in the monitored period. From comparing the aggregated cost ratios of individual chains, the Interspar chain's values stand out, reaching 35%. The high cost was very likely the main cause of the deep losses for this chain and its abandonment from the market.

The reason for the lower cost of discounters is not only the lower level of service and the share of personnel costs in sales in combination with higher labour productivity. Discounters, which represent medium-sized stores, have, like supermarkets, the ability to achieve a high value of sales per unit of sales area, which bears a large part of the costs. Low unit costs enable demand stimulation, attractive prices, and price promotions for customers, and building additional stores in a saturated market.

The similarity between the chains in cost structure can be found using cluster analysis. Indicators of the cost of goods, materials and services, personnel costs, and depreciation (ratios to sales of goods) are included to examine the similarity in terms of cost. In order to limit the influence of short-term fluctuations, the values of the indicators are aggregated over time into three groups, namely 2005 – 2009, 2010 – 2014 and 2015 – 2020. The dendrograms show the similarity of discount chains Lidl and Penny in terms of partial cost ratios. In the recent period, the small-format chain Billa has also been profiled as such discounters (Figure 5).

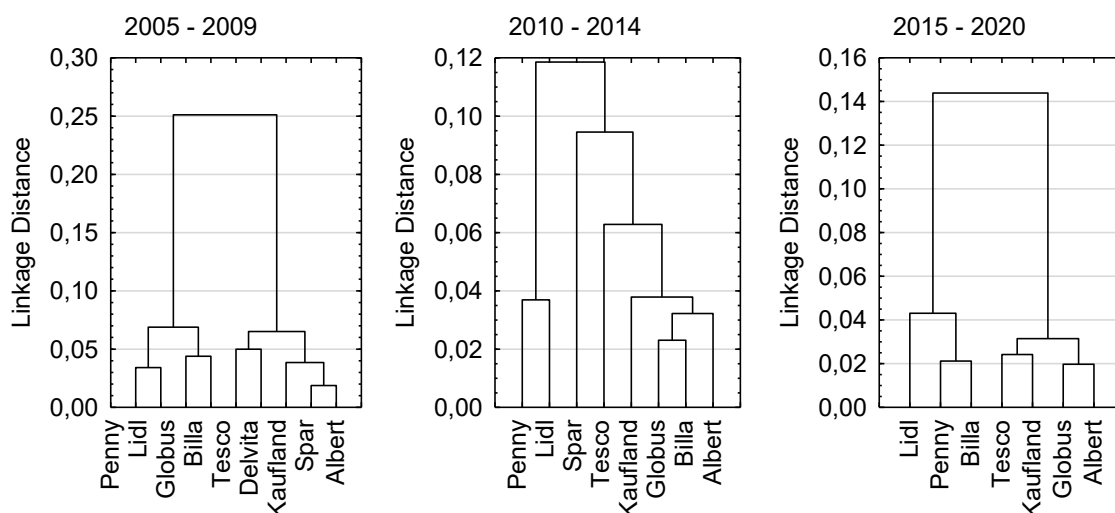


Fig. 5: Dendrograms of retail chains according to partial cost ratios

3.4. Profit before tax and profitability

In the profit and profitability of the largest trading companies, there was a significant shift in the monitored period. While in 2005 and 2006, the cumulative economic result of the entire group (including the DELVITA and Interspar chains) and its profitability was negative, in recent years, this group has shown a profit above the level of CZK 10 billion (Figure 6). The profitability of sales of goods of the entire group was above 4% during this period. The Lidl (8.37%) and Kaufland (5.08%) chains have maintained the highest profitability of sales in recent years. Two chains, which account for roughly 40% of sales for the entire group of chains, generated more than 65% of pre-tax profit. In 2020, Tesco Stores ČR (1.07%) and Globus ČR (0.99%) showed the lowest profitability.

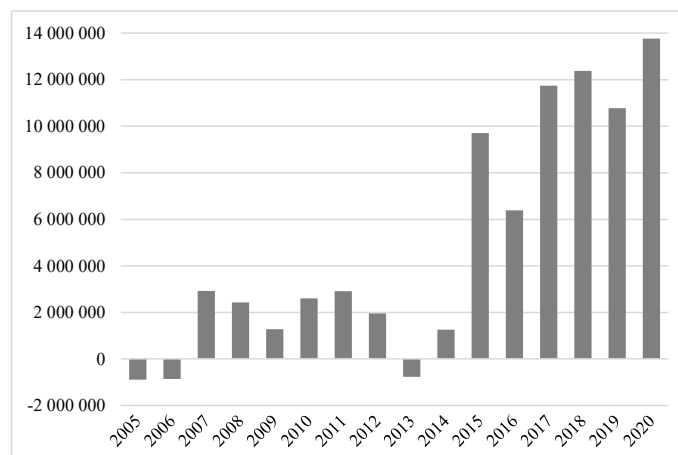


Fig. 6: Profit before tax (in th. CZK)

The profitability of sales for goods was very closely linked to the development of the entire economy. The value of the correlation coefficient between the profitability of the sales of the largest retail chains and the average wage in Czechia was $r = 0.83$ in the monitored period; in the case of the gross domestic product $r = 0.88$; and the general unemployment rate $r = -0.89$. The increase in the profitability of the largest chains was, as sales of goods, linked to the peak of the Czech economy, low unemployment, and record wage growth. When comparing profitability, there are significant differences between retail chains which are determined by the format of stores, the level of key processes (purchasing, logistics, marketing, sales) and the specifics of individual chains.

When calculating and comparing the correlation coefficients between the profitability of sales of goods and other economic indicators of the largest retail chains, two groups of chains emerged - discount chains Lidl and Penny Market and discounters together with the BILLA supermarket chain. The high value of the correlation coefficient and the connection with the profitability of sales of discount chains have their trade margin ($r = 0.82$) and the share of stock of goods in sales of goods ($r = -0.80$). The value of the correlation coefficient between the profitability of sales of goods and the total sales is $r = 0.65$ for discounters.

The values of correlation coefficients of discounters mainly influence the Lidl chain, which is the market leader. In its conditions, the correlation coefficient between the profitability of the sales of goods and the trade margin has a value of $r = 0.95$, and between the profitability and the share of the stock of goods in sales, $r = -0.86$. The value of the correlation coefficient between the profitability of the Lidl chain and the share of depreciation in sales for goods of this chain is also significant ($r = -0.85$). A significant influence on the profitability of Penny Market was labour productivity, for which the value of the correlation coefficient is $r = 0.82$; the share of aggregate consumption of energy and material and service costs on sales of goods ($r = -0.71$); and the share of depreciation on sales ($r = -0.77$).

3.5. Assets

The value of the assets of the companies that operate the largest retail chains in the FMCG area increased to more than double their original value (by 116.8%) in the monitored period. The highest relative increase in the value of assets occurred in the companies operating the Kaufland chains (by 391.8%) and Lidl (by 286.1%), which achieved the highest cumulative economic result before tax. There was also a significant increase in the assets for the companies that operate the Billa (by 249.6%) and Penny Market (by 198.6%) chains. The lowest increase in the reported value of assets occurred in Globus ČR (by 4.6%).

The value of assets of the largest chains grew more slowly than the value of sales of goods. The assets-to-sales ratio of the largest chains decreased by 25% in the monitored period. The value of fixed assets grew faster than the value of sales, despite a significant increase in the degree of its depreciation. This led to a decrease in their turnover and an increase in their share of total assets. The chains Tesco (65.9%) and Kaufland (60.1%) show the highest assets-to-sales ratio, while the lowest are Penny Market (19.4%) and Globus (20.8%). A comparison of the fixed assets-to-sales ratio is very similar. The chains Tesco and Kaufland show its highest level, Penny Market and Globus the lowest. The chains Globus (72.0%) and Penny Market (67.4%) had the highest level of depreciation of fixed assets, and the lowest was Lidl (24.5%).

The value of the stock of goods of the largest retail chains grew significantly more slowly than the value of sales of goods during the monitored period. The share of goods in sales, which decreased from 9.27% in 2005 to 5.44% in 2020, shows a significant shift of chains in logistics and inventory management. The Albert (4.11%) and Lidl (4.86%) chains have the lowest share of inventory in sales, reducing this ratio to less than half compared to 2005. The share of goods stocks to the sales of the Penny Market, Billa and Tesco chains was 5% in 2020. The chains Globus (8.14%) and Kaufland (7%) showed the highest share of inventory.

3.6. Capital

The equity value of companies that operate the largest retail chains increased by 61.2% in the monitored period. The share of equity in total assets has been hovering around 37% for a long time. The value of equity and debt grew more slowly than sales of goods. With the decrease in the assets-to-sales ratio, there was also a decrease in the capital intensity of sales for the largest chains. The share of liabilities to credit institutions to total debt increased from 19.7% in 2005 to 28.2% in 2020. Kaufland (54.7%) and Lidl (41.8%) reported the highest value of this indicator (they had the highest profit and profitability of sales). The companies operating the Penny Market, Billa and Globus chains had no liabilities towards credit institutions in 2020. The share of short-term liabilities from business relationships to total debt has been hovering around 30% for a long time. In the long term, the value of these liabilities is higher than the value of the stock of goods.

4. Conclusions

The group of the largest trading companies that operate retail chains (FMCG) in Czechia has been increasing its share in this highly competitive market for a long time. Chains that are part of the German concerns Schwarz Gruppe (Lidl, Kaufland) and Rewe (Penny Market, Billa) were particularly successful. The Czech market is dominated by the chains Lidl and Kaufland, representing 65.69% of the profit generated by the group of the largest chains in 2020. The unequivocal market leader is the chain Lidl, which has increased its market share from 6.12% to 16.32% over the last ten years. Lidl's success and dominance in the Czech market from the point of view of the economy are linked to high labour productivity and low unit costs. Lidl's high labour productivity is closely linked to the average wage, the highest of all monitored chains. Lidl's low costs per unit of revenue for the sale of goods are primarily due to low unit costs of consumption and services, low unit personnel costs and a low share of inventory.

From the point of view of retail formats, discount stores are particularly successful, which, together with medium-sized supermarkets, are growing at the expense of hypermarkets and large supermarkets. The combination of price promotions and a wide range of private products, characteristic of discount chains, is very attractive to customers, stimulates demand and, together with low unit costs, creates the potential for increasing the market share of discounters in a saturated market in Czechia. Chains that operate large supermarkets and hypermarkets have a high cost of sales, lower labour productivity and higher trade margins, stagnate or even lose their market share.

The analysis of the relationships between selected economic indicators and key national economic variables demonstrated a close connection between the economy of the largest retail chains and the development of average wages, gross domestic product, and unemployment. The development of the national economy significantly affects the development of sales and the profitability of retail chains. The record values of sales and profits achieved by the largest retail chains in Czechia in recent years were linked to the boom in the Czech economy, record growth in average wages and low unemployment. The period of the covid-19 pandemic has been very successful for the economy of most retail chains due to the increase in sales of goods, which was significantly influenced by the shift of demand from canteens and restaurants to retail stores and which exceeded the increase in costs.

In the near future, concerning the expected slowdown in the rate of growth of the Czech economy and the stagnation of real wages, a slowdown in the growth rate of the sales of the group of the largest retail chains and their financial results can be expected. This will probably lead to a sharpening of the competitive struggle, a further increase in the share of purchases in price promotions and an increase in the share of private products. Discounters and medium-sized supermarkets are likely to increase their market share further, where online stores will also gain more and more ground. Hypermarkets and large supermarkets are likely to face further stagnation and pressure to downsize stores, automation (e.g., introducing self-scanning, self-service cash registers or self-service stores) and other cost reduction methods.

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Is the remittance inflow to the Turkish economy resilient? A glimpse of the future through the lens of the past.

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Abstract. *The impact of global remittance inflows on numerous macro- and microeconomic parameters has long piqued the interest of researchers, policymakers, and academics. Remittances have always been vital to Turkey's development as a remittance recipient country. However, this trend has recently changed. Turkey is currently receiving significantly less remittance, and this reduction in remittance is well noted in its economic performance. With declining economic growth, rising inflation, and a depreciating value of the Turkish Lira, economists and researchers are looking for measures to overcome these snags. This study is an endeavor to examine whether Turkey's remittance inflows will increase in the future or if their decline will continue. A time series dataset for the period of 1974-2021 has been considered for analysis, and an auto-regressive integrated moving average (ARIMA) approach was applied to forecast remittance inflow for the next nine years until 2030. According to the study's findings, remittance inflows to Turkey would fall to -1.02 percent of GDP in 2030, down from 3.99 percent in 1974. The finding of the study will help economic and financial policymakers to devise the policies related to foreign funds in advance so that unwanted consequences of limited remittance inflows can be avoided.*

Keywords: Remittances, Turkey, ARIMA, Forecasting, Economic development.

JEL Codes: F24, F63, C53

1. Introduction

Remittances are funds that migrants primarily send back to their home countries. (World Bank, 2022b). The dream of earning a good salary, having a good life, and providing the best possible support to family members are some of the reasons that motivate people to migrate from one country to another. Foreign remittances have recently surpassed foreign direct investment and overseas development assistance as the most important source of foreign funds for developing countries (Stephen, 2021). Given the importance of remittance inflows, researchers and economists have been drawn to investigate the impact of remittance inflows on various macro- and microeconomic growth variables. Previous studies observed that remittance inflows affect economic growth, poverty, financial development, inflation, exports, and the currency rate (Azizi, 2020; Basnet et al., 2022; Oleksiv and Mirzoieva, 2022). The interesting fact that came out of the majority of studies was that remittance inflows have a positive effect on these variables. Especially in the case of developing economies, the impact of remittances was found to be significant in most of the cases (Abduvaliev and Bustillo, 2019; Cazachevici et al., 2020). In contrast to this there are few studies that has confirmed that remittance inflows do not significantly affect the macroeconomic factors (Khan and Gunwant, 2023). It was also observed that declining remittance inflows impacted developing economies.

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One such developing country is Turkey, which used to get a fair share of international remittances. Remittance receipts used to represent 3.99 percent of Turkish GDP in 1974, which was equivalent to 1.42 billion US dollars. However, by the end of the year 2020, remittance receipts to Turkey had declined to a level of 0.11 percent of GDP, equivalent to 795 million dollars (World Bank, 2022a). This decline in remittance inflow had been attributed to many factors, including the massive earthquake in 1999, which decreased the remittance inflows by highlighting the fact that financial motivation was the major remittance driving force rather than altruism (Aydas et al., 2014a). Another reason was the increase in household income which caused a decrease in remittance inflows (Hunte, 2016).

Although these were the reasons for the decline in remittances at various points in time. Past studies that have included remittance inflows and have been done in the context of Turkey show very exciting findings. In one such study, Bayar, (2017) has found that remittance inflows to Turkey help in enhancing portfolio investments and FDI inflows to the economy. In another study of Turkish economy, it has been found out that remittance inflows helped in improving the real GDP of the country (Sayan and Tekin-Koru, 2012). On the front of poverty, in a panel data-based study it has been found that a 10 percent increase in remittance cause a decline of 5.3 percent in poverty levels for those who live below USD 2 per day (Ciupureanu and Roman, 2016). Aysit and Pinar, (2010) have analysed the dynamic multiplier effect of remittance inflows on consumption, imports, and income of the country. They found out that remittance positively affect all these factors. In a Turkish international migration survey-based study by Koc and Onan, (2018), it has been found out that remittance inflows helped in improving the standard of living in Turkish households. Furthermore, it has also been found out that those households who live in urban areas spend most of their daily expenses through remittance inflows.

Since most of the past studies in the context of Turkish economy posts a positive impact of remittance inflows on different economic indicators. Hence the question arises: what if we knew in advance the remittance inflow would be in the future? Knowing remittance inflows in advance will provide a more realistic picture for economic policymakers as they develop Turkey's future remittance policies. Especially in a situation when Turkey is already passing through one of the toughest times in its economic history. By the end of August 2022, inflation had breached all past records in 24 years by reaching a peak of 80.21 percent (Daren Butler and Canan Sevgili, 2022). Furthermore, as gold imports increased while tourism receipts and exports decreased, the current account deficit reached USD 36.7 billion, or 5.1 percent of GDP, by the end of 2020 (Tuba Sahin, 2021). The forex reserves also fell because the Turkish Republic Central Bank financed up to 80 percent of the current account deficit. Moreover, the second wave of COVID-19 exploded at the end of 2020, with daily cases surpassing 30,000 in the month of November (Julia Hahn, 2020), which eventually resulted in the further degradation of economy (World Bank, 2022b).

Not only this, in an effort to provide additional aid to safeguard the economic and social outcomes caused by the pandemic, the comprehensive national deficit is anticipated to be 3.5 percent of GDP in 2021, before reducing to 3.1 percent in 2022 and 2.6 percent in 2023 (World Bank, 2021). Poverty levels could rise by 2.1 percent by 2020, resulting in 1.6 million more people living in poverty and scarcity (World Bank, 2022a). Like the recession of 2018–2019, this current tragedy has a depressing effect on society. The World Bank has also pointed out that the government needs to take swift action to mitigate the social effects of COVID-19, or else poverty will quadruple. The poverty rate in Turkey is predicted to rise to its highest level in 2021 (World Bank, 2022a). Therefore, in order to effectively alleviate poverty, it will be necessary to implement control packets of social transfers, comprehensive job creation, and worker activation activities to

guarantee that benefits reach informal and unskilled workers, as well as other marginalized communities in which remittance inflows can play a crucial role (World Bank, 2021). Since Turkey is currently facing all these issues which are showing a bleak picture in the future for the economy. Hence, the question arises whether remittance inflows can be one such variable that can help revive the economy?

Since remittance inflows to Turkey were historically higher but are currently trending downward, the country is experiencing economic hardship. The economy's long-term objectives may be jeopardized if remittances continue to fall. As a consequence of this, it is of the utmost importance that decision-makers obtain advanced notice of forthcoming remittance inflows to the nation. This will enable them to take prompt action to mitigate the potentially negative effects of a decline in remittances and to devise a policy that can boost remittances sent from around the world.

Within this framework, the current research adds at least three new insights into the existing literature. Primarily, by forecasting remittance inflows, economic policymakers will be able to channel remittance funds into sectors that can help improve economic growth. Second, this forecast can help monetary policymakers plan their forex reserves ahead of time. Lastly, this prior anticipation can enable the economy to achieve its sustainable development goals. Taking this into account, the current analysis is the very first inference for the Turkish economy that attempts to predict the future trend of remittance inflows. Thus, the research question is as follows:

RQ: Are the remittance inflows to the Turkish economy resilient?

The remainder of the study is structured as follows: The review of literature is summarized in Section 2, the theoretical framework, data, and econometric methodology are discussed in Section 3, the results are shared and discussed in Section 4, and Section 5 concludes the research study.

2. Literature review

It is well known that remittances are a substantial source of overseas funds in emerging economies due to inadequate savings by individuals for their investments. Even during the COVID-19 crisis, the remittance inflows have maintained their persistency and resilience, declining less than forecast in 2020. The officially registered remittance movements to low- and middle-income nations totaled USD 540 billion in 2020, a meager 1.6 percent decrease from the previous year's sum of USD 548 billion. Furthermore, the drop in remittances reported in the year 2020 was not greater than that witnessed during the global economic crisis of 2009 (4.8 percent). Furthermore, it was significantly less than the deteriorating foreign direct investment flows to low- and medium-income countries (World Bank press release, 2021).

The resiliency of remittance inflows is primarily influenced by the factors that contribute the most to it. As and when these factors get affected, then the remittance inflows also get affected. According to the literature, there are two distinct classes of factors that influence worker remittances. The core category centers on the economic status of immigrants and their offspring. The other set of variables includes factors like the macroeconomic condition, the political situation, and the structure of an economy (Buch and Kuckulenz, 2010; Ratha, 2003). Taking these factors into account, one such study, which was based on

primary data from 84 households in Bangladesh, found that years of living abroad, altruism, and the exchange rate are the major factors affecting remittance inflows (Kumar et al., 2018). In a study of qualitative data analysis, it was found out that the fear of sudden interruption of remittance channels, conflict in the region, and the chances of repatriation are the major causes that affect remittance inflows (Vargas-Silva, 2016). A research study that was done in Pakistan for 1972–2012 highlighted that inflation negatively affects remittance inflows while financial liberalization has a positive effect on remittance inflows (Abbas et al., 2017). Vacaflores, (2018) in his study of 18 Latin American countries for 1995–2015, found that external forces are the major factors affecting the remittance inflows. Su and Dé, (2021) in their study of factors affecting remittance during a typhoon in the Philippines, found that the socio-economic class of the migrants, their culture, and their income were the major factors that affected remittance inflows. In a survey-based study of 3800 households in the United States, it was indicated that higher household income among migrants is the major driver of remittance outflows (Simpson and Sparber, 2019).

In their study of determining the macroeconomic indicators of remittance drivers in India, Jijin et al., (2022) discovered that exchange rate, oil price, and GDP growth are the major factors, while altruism also plays an important role. In their study of Egypt from 1980 to 2015, Akçay and Karasoy, (2019), discovered that currency depreciation, international oil prices, and GDP growth are the major drivers of remittance inflows. Similar results were also found by Qutb, (2019) during her study of Egypt for the period of 1980–2018. In an interesting study of two villages in India, Mazumder, (2018), has highlighted that low-skill migrants tend to send less remittance as compared to their high-skill counterparts. Another fascinating investigation was done by Gutierrez, (2018), in his study of second-generation Mexican and Filipino Americans, he concluded that socializing in the parental home during their childhood has a profound effect on remittance behavior. Similarly, social connection in the home country also positively affects remittances. While examining the macroeconomic determinants of remittance in Pakistan, Khalid Mustafa and Syed Rashid Ali, (2018) have taken a bilateral remittance dataset over the period of 2002–2013 and concluded that it is the economic performance of the home country that decides the amount of remittance that will be received, as it is mainly linked with investment opportunities available in the country. Aydas et al., (2014b), in their study of determining the factors contributing to remittance inflows to Turkey for 1979–1993, have concluded that economic growth, political stability, inflation, and the interest rate differential are required to be kept in check to have stable remittance inflows. Ajide and Alimi, (2018) in their study of 22 sub-Saharan African countries for 1994–2015, found that political instability is one of the major factors that affect remittance inflows. However, they also concluded that remittances themselves cannot resolve the issues created by political instability.

Furthermore, Poonam Gupta, (2006) in her study of remittance inflows to India, has found that the earning level of the migrants, the percentage increase in the number of migrants, and the economic performance of the home country are the major determinants that determine the number of remittance inflows. A survey-based study that was done by Havolli, (2009) observed that investment motives and the business environment are the deciding factors that attract remittance inflows. As a result, it was determined that economic policymakers should work to create a business-friendly environment in the country. In their study of 76 low- and middle-income developing countries, Adams, (2009) concluded that highly skilled migrants remit a lower amount than low-income migrants because high-income migrants bring their families with them to the host country. While it has also been discovered that the availability of a high-interest rate and investment opportunities attract highly skilled migrants to remit more. In the case of Nigeria, a study conducted by Laniran and Adeniyi, (2015) using a dataset from 1980 to 2013 concluded that the portfolio

investment motive plays a larger role as a remittance inflow driver than any other macroeconomic factor. By taking a bilateral remittance panel dataset of 17 Western European and 7 European Union countries, Schiopu and Siegfried, (2006) have investigated the impact of altruism and investment on remittance inflows. The study concluded that it is altruism that plays a major role in remittance inflows, not investment motives. Furthermore, the study has also concluded that the high skill level of migrants enhances the remittance movement. Moussir and Tabit, (2016) discovered that inflation, economic growth in the home and host countries, and financial development are the major determinants of remittance inflows in their study of 22 developing countries using a dataset from 1990 to 2014. Furthermore, in a study of India by Khan, (2023) it has been found that any positive shock in remittance inflows has a positive effect on economic growth. In an interesting study of 93 countries, Jackman, (2013), has searched for the factors that cause volatility in remittance inflows. The findings of the study indicated that interest rate and exchange rate volatility and economic shocks in the home country were the major factors that caused volatility in the remittance inflows.

Singh et al., (2011), in their study of 36 sub-Saharan African countries for which they have taken a dataset over the period of 1990–2005, have concluded that it is the size and location of the migrants that decide the inflow of remittance. Moreover, the study has also highlighted that if the migrants are located in rich countries, then their remittance inflows act as shock absorbers during tough economic situations. Another fascinating piece of research was done by El-Sakka and McNabb, (1999) in their study of Egypt by taking a dataset over the period of 1967–1991. The authors discovered that the currency exchange rate and interest rate are the two most important factors influencing remittance inflows. Because of the availability of non-competitive exchange and interest rates, money is transferred through the black market.

Although, there is very limited literature available on the determinants of remittance inflows to Turkey. In one of the very famous studies that was done by Straubhaar, (1986) has taken a dataset over the period of 1963 – 1982 and analyzed the factor that affects the remittance to Turkey. The results were quite astonishing as he found that it is neither the exchange rate nor the higher return on investments that attracts Turkish migrants to remit more, rather it is the political stability and the stability of return on investment that plays a major role. In another study for Turkey by Alper and Neyapti, (2014) by taking a dataset of 1992-2003, the authors found that low inflation, a high interest rate, a healthy exchange rate, and a stable economic condition are some of the factors that enhance remittance inflows to the economy. Köksal, (2006), in his study of the Turkish economy over the period of 1961-2004 found that apart from macroeconomic factors, it is the financial infrastructure in the home country that attracts remittance inflows. Ulku, (2012) in his survey-based study of 589 Turkish migrants in Berlin, has found that those migrants who have an intention of returning to their home country send more money than those who do not intend to return. On the other hand, those who do not intend to return to their home country send money mainly to fulfill the family's requirements. Akkoyunlu and Kholodilin, (2006) conducted a study on Turkish migrants in Germany by taking a dataset over the period of 1962-2004 and concluded that it is the economic condition in the host country that determines the remittance inflows to Turkey. They have also recommended that Turkish economic policymakers keep an eye on the economic conditions in Germany to predict future remittance inflows.

These all-literature findings mostly highlight that political stability, altruism, social connection, GDP growth of an economy, currency exchange rate, availability of investment opportunities, control of inflation, and the skill level of the migrants are the major factors that contribute to the enhancement of remittance inflows. The interesting fact is that all of these factors can be controlled at a national level, up to a certain

extent, if related policies are put in place with a specific agenda. Furthermore, other factors such as the host country's economic condition and political stability can provide insight into future remittance inflows by taking the concentration of migrants in those countries into account. Lastly, global oil prices, political instability in other parts of the world, and the cost of living in host countries are some of the factors that are mainly out of the control of a particular economy.

There are many distinct characteristics and reasons that generate remittance inflows to the host country, and the literature is abundant with varied examples of both. Therefore, it is reasonable to believe that remittances have the potential to contribute positively to the economic expansion of the Turkish economy. However, no study is currently available that captures the forecast of remittance inflows, which would allow economic policymakers to prepare themselves in advance so that preventative actions could be taken. To bridge this gap, the current study is the very first inference for the Turkish economy that seeks to forecast the future trajectory of remittance inflows.

3. Data and methodology

Remittances are those financial resources that support economies with insufficient funds (Huseyin Karamelikli and Yilmaz Bayar, 2015). In this research, time series data for the period of 1974–2021 has been used, and the data has been collected from the World Bank website (World Bank, 2021a). Moreover, remittance inflows are depicted as a percentage of GDP, while the autoregressive integrated moving average (ARIMA) methodology has been used to forecast the remittance inflows from the years 2022 - 2030.

The ARIMA methodology that has been applied in this study is a statistical method for decomposing and predicting time series data by modeling the correlations in the data. The ARIMA methodology has some advantages in real-world applications, particularly for short-term prediction (Box and Jenkins, 1970). Furthermore, the ARIMA method only requires prior data from a time series to generalize the forecast. As a result, the ARIMA method can improve forecast accuracy while retaining the number of parameters to a minimum.

The ARIMA methodology is made up of three components, which are AR, I, and MA. The AR (autoregressive) component takes the past value of the selected variable, whose future values are required to be forecasted. The MA (moving average) component accounts for the past values of the error term. The I (integration) element describes the stationarity level of the selected variable (Crawford and Fratanoni, 2003). If the chosen variable is stationary at level, the ARMA model is used; if the chosen variable is stationary at the first difference, the ARIMA model is used.

The ARIMA model is also known as the ARIMA (p, d, q) model or simply AR (p), d, and MA (q). In the below-mentioned equation 1, the variable "y" denotes the dependent variable whose value is required to be forecasted. While the letter "p" denotes the past value used for the AR (autoregressive) component up to the pth extent, while μ_t represents the error term, it has a constant variance, a zero mean, and a white noise error term.

$$y_t = \mu + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \phi_3 y_{t-3} + \dots + \phi_p y_{t-p} + \mu_t = \mu + \sum \phi_i y_{t-p} + \mu_t \quad (1)$$

In the below-mentioned equation 2, the variable "y" denotes the dependent variable whose value is required to be forecasted. while the letter "q" denotes the linear combination of past error values for the MA (moving average) component up to the qth extent. Since it is a linear combination of past error values, we can simply assume that the MA (q) process is stationary. The MA (q) process could be expressed as follows:

$$y_t = u_t + \theta_1 u_{t-1} + \theta_2 u_{t-2} + \theta_3 u_{t-3} + \dots + \theta_q u_{t-q} = u_t + \sum \theta_i u_{t-i} \quad (2)$$

Equation 3 denotes the combination of results related to equations 1 and 2. It is as follows:

$$y_t = \mu + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \phi_3 y_{t-3} + \dots + \phi_p y_{t-p} + u_t + \theta_1 u_{t-1} + \theta_2 u_{t-2} + \theta_3 u_{t-3} + \dots + \theta_q u_{t-q} \quad (3)$$

3.1 Steps of ARIMA model

As a starting point of the process, it is required to check the stationarity level of the selected variable. If the variable becomes stationary at level, then the ARMA model is applied. The ARIMA model is used if the variable becomes stationary after taking the first difference. Once the stationarity level is confirmed, the second step is to determine the order of AR (p), integration (d), and MA (q). To fulfill this requirement, it is required to plot the values of the autocorrelation function (ACF), which captures the MA (q) term, and the partial autocorrelation function (PACF), which captures the AR (p) term. These are generated with the help of a correlogram. Those correlograms that cross the boundary limit of the ACF and PACF functions are taken into consideration, and they form different combinations of ARIMA models. Since there can be different ARIMA models available, it is required to select the best model among all available models that can be used for forecasting. The model is chosen by looking for the model with the highest R square value and the lowest information criterion value based on the AIC and SIC information criterion.

Once the best-suited model has been finalized, the next step is to use the selected model for forecasting. Furthermore, to ensure that the selected model has a strong predictive ability, it is required to apply a few diagnostic tests. Firstly, the Ljung-Box diagnostic test is applied to ensure that there are no autocorrelations in the errors. The null hypothesis is that there is no autocorrelation in the errors, while the alternate hypothesis indicates that there is an autocorrelation in the errors. If the p-value is greater than 5 percent, then it's a confirmation that there is no autocorrelation in the errors (Ljung and Box, 1978a).

Subsequently, we check to ensure that the ARIMA process is invertible, and the covariance is stationary. It is confirmed by checking that AR and MA roots should be within the unit circle. Once these diagnostic tests are satisfied, we move ahead with the forecasting process by selecting the best fitting ARIMA model.

4. Results and discussion

4.1 Unit root test

As an initial step, it is required to check the stationarity level of the selected variable. This requirement has been fulfilled by applying the augmented Dickey-Fuller unit root test (Dickey and Fuller, 1981).

Table 1. Unit Root Test

Variable	At Level & Intercept			At Level & trend and intercept		
	t-Stats	Prob.*	Result	t-Stats	Prob.*	Result
At Level & Intercept	-1.4654	0.542	Non-Stationary	-5.089	0.0001	Stationary
At Level & trend and intercept	-3.0701	0.1253		-4.8935	0.0016	

Source: Authors computation via Eviews10

According to Table 1, remittance inflow time series data is non-stationary at both the level and intercept and the level, trend, and intercept. However, after checking for stationarity after taking the first difference, the series becomes stationary at both the level and intercept, as well as the level, trend, and intercept. With this outcome, it has been concluded that the ARIMA model is best suited for this analysis.

4.2 Correlogram generation:

The next step is the generation of a correlogram to find the values of autocorrelation and partial autocorrelation. The values of AC (autocorrelation) depict the MA term, while PAC (partial autocorrelation) depicts the AR term. All those bars that cross the dotted line form the basis for finding the probable combination of ARIMA models. The use of correlograms is very common when formulating ARIMA models. For instance, Benvenuto et al., (2020) have also used correlograms while modeling the ARIMA model in their research on forecasting the COVID-19 virus spread. As per Figure 1, it has been discovered that there can be four possible ARIMA model configurations, which are as follows: AR (4) MA (4), AR (4) MA (6), AR (6) MA (6), and AR (6) MA (4).

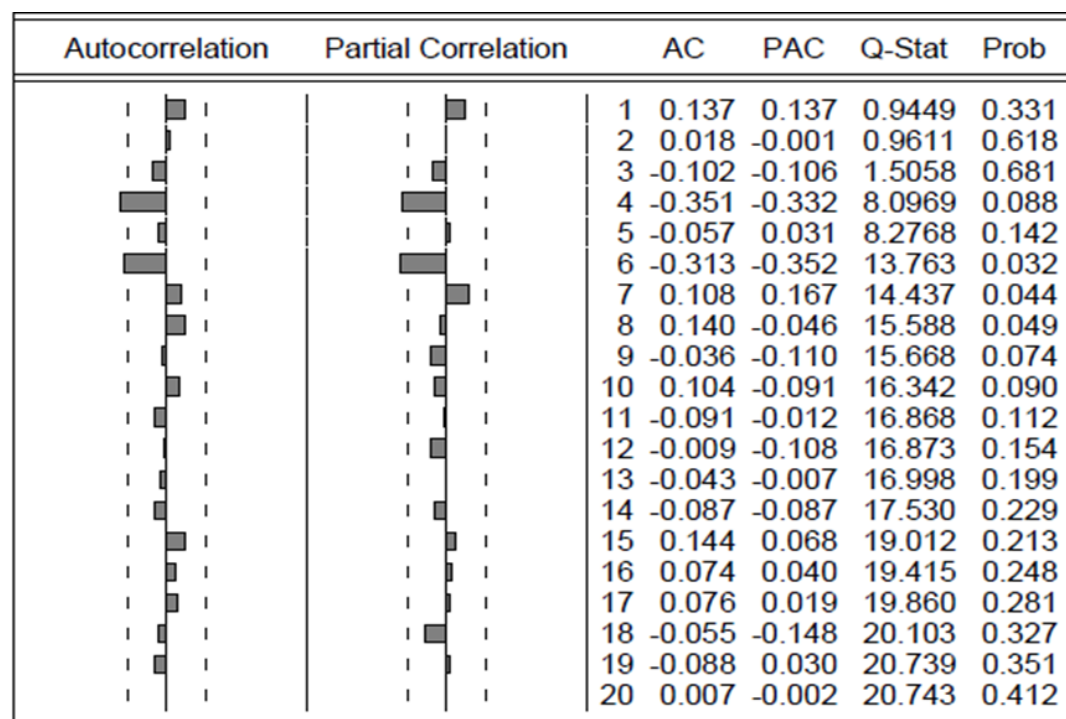


Fig. 1: Correlogram

Source: Authors computation via Eviews10 software

4.3 ARIMA model selection:

The third step is analyzing all four potential ARIMA models and selecting the one that is best suited to be used for forecasting. The parameters to analyze the viability of the model include the model that has the maximum R square and adjusted R square values, significant F-statistics values, and the lowest AIC, SIC, and HQ values. On analyzing these parameters in Table 2, the most preferred model was found to be Model: 2 AR (4) MA (6), as it has the highest R-squared and adjusted R-square values of 0.5633 and 0.5388, respectively, a significant F-statistics value of 0.0000, and the lowest values for the AIC, SIC, and HQ information criteria, which are 0.6859, 0.8434, and 0.7452, respectively, in comparison to other models. Finally, Model: 2 AR (4), MA (6) has been chosen for forecasting.

Table 2: ARIMA model selection

Model	Variable	Coefficient	Std. Error	t-Statistic	Prob.
Model: 1 AR(4) MA(4)	C	-0.069919	0.044821	-1.559965	0.1261
	AR(4)	-0.5763	0.345193	-1.669499	0.1023
	MA(4)	0.174226	0.493488	0.353051	0.7258
	SIGMASQ	0.136612	0.020407	6.694246	0.0000
	R-squared	0.170072		AIC	1.036449
	Adjusted R-squared	0.11217		SIC	1.193908
	Prob(F-statistic)	0.043855		HQ	1.095702
Model: 2 AR(4) MA(6)	C	-0.079212	0.016578	-4.778127	0.0000
	AR(4)	-0.502552	0.087794	-5.724232	0.0000
	MA(6)	-0.999979	2689.389	-0.000372	0.9997
	SIGMASQ	0.071877	110.7424	0.000649	0.9995
	R-squared	0.563344		AIC	0.685969
	Adjusted R-squared	0.53288		SIC	0.843428
	Prob(F-statistic)	0.0000		HQ	0.745222
Model: 3 AR(6) MA(4)	C	-0.077959	0.023009	-3.388251	0.0015
	AR(6)	-0.633683	0.089706	-7.064012	0.0000
	MA(4)	-0.511803	0.149907	-3.414141	0.0014
	SIGMASQ	0.102883	0.017949	5.732077	0.0000
	R-squared	0.374979		AIC	0.820613
	Adjusted R-squared	0.331373		SIC	0.978072
	Prob(F-statistic)	0.000138		HQ	0.879866
Model: 4 AR(6) MA(6)	C	-0.084937	0.034612	-2.453949	0.0183
	AR(6)	0.153409	0.331341	0.462994	0.6457
	MA(6)	-1	6305.294	-0.000159	0.9999
	SIGMASQ	0.098893	312.4489	0.000317	0.9997
	R-squared	0.399222		AIC	0.938023
	Adjusted R-squared	0.357307		SIC	1.095482
	Prob(F-statistic)	0.000061		HQ	0.997276

Source : Authors calculation via Eviews10 software

4.4 Forecasting:

Forecasting is the penultimate requirement of the ARIMA model. According to Figure 2, remittance inflows to Turkey are expected to fall further in the coming years. In the year 1974, remittance inflows represented 3.99 percent of Turkish GDP, but it is forecast that they will fall to a level of -1.029 percent of GDP by the end of the year 2030. Moreover, Table 3 indicates the details of remittance inflows as a percentage of GDP across the years 1974–2030. This decline in remittance inflows raises several questions

about the performance of the economy in the upcoming years. It's been mentioned by de Lucia et al., (2021) that in Turkey, remittance inflows and economic growth go hand in hand, and both of these factors positively affect each other. Similarly, Buhari Doğan and Muhlis Can, (2018) have found in their study of the Turkish economy that remittance inflows positively affect the economic growth of Turkey in both the short and long term. Hence, if the remittance inflows decline, there is more of a chance that it will negatively affect economic growth. One of the reasons for this decline can be attributed to the increase in the number of migrants in Turkey. By the end of December 2021, it was reported that a total of approximately 5 million migrants lived in Turkey (United Nations, 2021). In the year 2019, Turkey has received 24 percent more migrants compared to the year 2018. During the same period, however, only 2 percent of emigrants from Turkey to OECD countries increased. This imbalance has further impacted the remittance movement (OECD, 2021). Secondly, the existing literature also highlights that remittance inflow leads to appreciation in the exchange rate, which is generally called "Dutch disease" (Hien et al., 2020). However, in the case of Turkey, the remittance inflow has declined, and it is expected that the remittance inflow will continue to decline, which is an alarming sign highlighting the fact that the Turkish Lira's value may depreciate due to lower remittance inflows. Not only this, but the depreciation in currency value makes imports expensive and brings inflation to the economy (Kibritçioğlu, 2001). According to Reuters, inflation has reached a 24-year high, peaking at 83.45 percent in September 2022 (Murad Sezer, 2022). Hence, in conclusion, we might assume that if remittance inflows can be enhanced, then the current imbalances in the economy can be brought back on track.

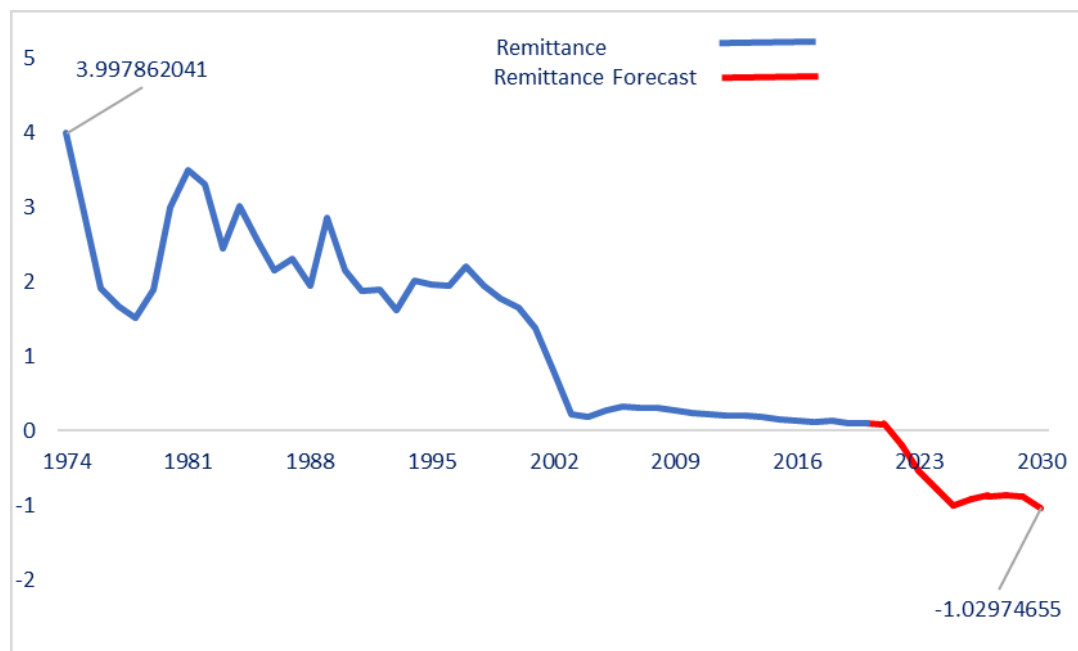


Fig. 2: Remittance forecast
 Source: Authors computation via Eviews10 software

Table 3. Remittance Forecast (% of the GDP)

Year	Remittance (% of GDP)
1974	3.997862041
1975	2.930933913
1976	1.920578231
1977	1.673388242
1978	1.510013275
1979	1.89638242
1980	3.009138531
1981	3.505066574
1982	3.315447857
1983	2.45305154
1984	3.012173241
1985	2.549269456
1986	2.157722091
1987	2.318383995
1988	1.954810117
1989	2.858786885
1990	2.154287165
1991	1.878984677
1992	1.898281274
1993	1.620138908
1994	2.010097587
1995	1.962994676
1996	1.95177802
1997	2.210871419
1998	1.940808993
1999	1.768040531
2000	1.662395483
2001	1.380909116
2002	0.805816476
2003	0.2317284
2004	0.196636613

2005	0.270191101
2006	0.329050218
2007	0.307630287
2008	0.316563245
2009	0.282469965
2010	0.234107764
2011	0.224497331
2012	0.213614943
2013	0.198479192
2014	0.185206362
2015	0.161399178
2016	0.136369967
2017	0.122002859
2018	0.144128516
2019	0.106438277
2020	0.110423595
2021	0.108423595
2022	-0.188166453
2023	-0.540811175
2024	-0.778075311
2025	-0.992647418
2026	-0.916080111
2027	-0.861279627
2028	-0.861061721
2029	-0.872247747
2030	-1.02974655

Source: Authors computation via Eviews10 software

4.5 Diagnostic Test:

Test 1: Correlogram Q Statistics test - The first diagnostic test is to ensure that the selected ARIMA model exhibits a stable univariate process. The Ljung-Box Q statistics test with the null hypothesis that the residuals are white noise has been applied (Ljung and Box, 1978b). Figure 3 shows that neither in autocorrelation nor in partial correlation do any values cross the dotted lines. Moreover, the p-values at all the lags are greater than the 5 percent level of significance, which indicates that the null hypothesis is accepted as the residuals are white noise.

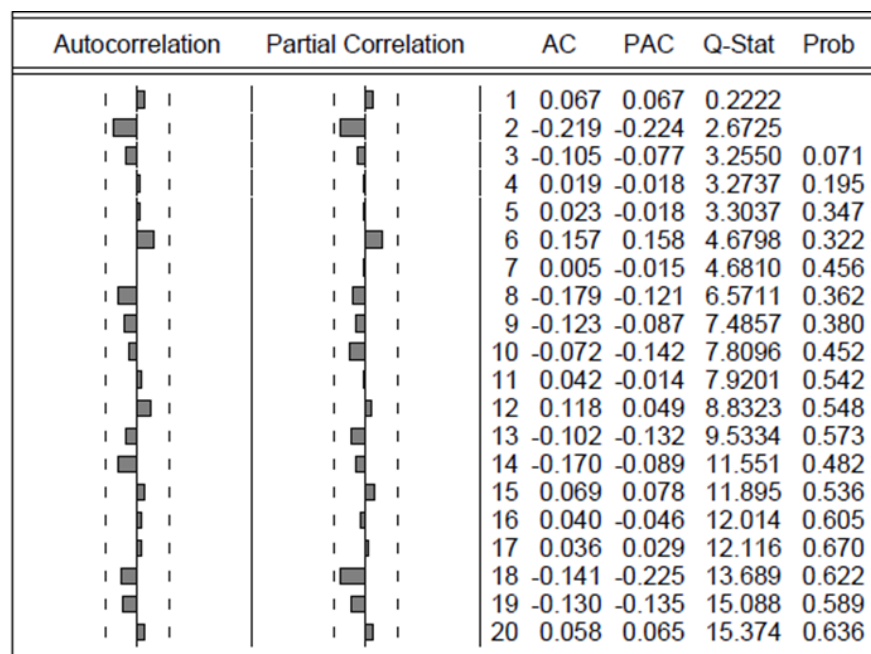


Fig. 3: Correlogram Q statistics diagnostic test
 Source: Authors computation via Eviews10 software

Test 2: ARMA process for (covariance) stationarity and invertibility - Another investigative test is to determine whether the predicted ARMA process is stationary (covariance), which requires that the AR roots be located within the unit circle. As shown in Figure 4, all of the white color dots are contained within the circles, signifying that the ARMA method is covariance stationary. Lastly, make sure that the estimated ARMA process is invertible, which denotes that all MA roots should be confined within the unit circle. As demonstrated in Figure 4, all red-colored dots are enclosed inside the circle, suggesting the invertibility of the ARMA process.

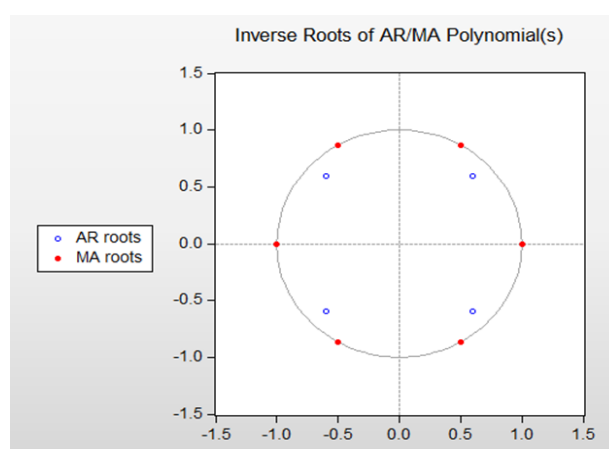


Fig. 4: Remittance forecast
 Source: Authors computation via Eviews10 software

5. Conclusion and policy recommendation

The relevance of remittance inflows to different economic parameters has always attracted policymakers, and it is well recognized in existing literature. However, the majority of studies empirically examine the impact of remittances on various parameters and draw conclusions about their effect on those parameters. This eventually helps policymakers and the relevant governments to devise the policies accordingly. But the question is whether this remittance inflow will continue to be received at the same rate in the future as it has in the past? This is the question that is mostly missing in the majority of the studies. Taking this into account, if we knew in advance what the future remittance inflows to the economy would be, it would be easier for policymakers to devise policies that would help different factors that could be affected by remittances in the future. To fulfil the requirement of forecasting future remittance inflows to the Turkish economy, this study has taken a dataset for the period of 1974–2021 and applied the autoregressive integrated moving average (ARIMA) technique to predict the remittance inflow for the period of 2022–2030. The results indicated a bleak picture of future remittances, as it was found that remittances will continue to decline and will reach a negative 1.02 percent of GDP by the end of the year 2030. Based on the findings of the study, we may conclude that if the remittance inflow continues to decline in the future, then it can have negative impacts on economic growth, financial development, poverty level, exchange rate, and so many other factors that are directly or indirectly related to remittances. Hence the following policies are recommended.

- The policymakers can provide relaxation in the KYC procedures taking in account the necessary compliance measures
- Preferential exchange rates can be offered to those who remit to the home country
- An infrastructure of investment can be created so that those households who receive remittance has the option of investing in different channels rather than keeping the funds in the bank account
- For those households who receive remittances above a certain limit can get the benefit of having loans on easier terms

6. Limitation and future work

As far as the limitations of the study are concerned, only remittance inflows are being taken as the major variable, and their forecast has been made. However, besides remittance inflows, other foreign sources of funds, including foreign direct investments and ODA, can also be a factor of interest for future research. Though we have these limitations, the current study has successfully managed to answer the framed research question.

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The Impact of Social Media Relationships on e-WOM in Syria and Hungary

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Abstract: *Cultural values play a crucial role in the formation of individuals' behaviour. With the emergence of social networking sites, which have formed a parallel world to the real world, the behaviour of individuals and their motives to engage in electronic word of mouth (eWOM) on social media platforms has become extremely important for brands. Due to a relative lack in studies focusing on the cultural difference-based impact of social relationships on eWOM in social media, the present study seeks to address this gap as its broad objective is to investigate the effect of social relationship variables on eWOM in social media by comparing two different cultures, namely Syria and Hungary in order to explore whether social relationships exert a more significant impact on eWOM in a collectivistic society than in an individualistic one. An explanatory research design was adopted and the data was collected by means of a questionnaire survey. The final sample included 113 Syrian and 90 Hungarian respondents, all of them aged 35 or below. It was found that tie strength among young adults has a more positive impact on eWOM in Syria than in Hungary, while no homophily impact was found on eWOM in either. Regarding the other social relationship variables examined in the study (trust, normative and informational influences), the results showed that they do not have a more positive impact on eWOM in Syria than in Hungary. The research is believed to have contributed to previous investigations on the impact of social relationships on eWOM via social media by providing insights into the role of a cultural value dimension in determining the extent to which individuals are affected by their cultural background, whether collectivistic or individualistic, when they interact in social media platforms. At the same time, it is acknowledged that the study has limitations thus future examinations are necessary.*

Keywords: cultural values, eWOM, social media, social relationship variables

JEL Codes: C12, C83, D12, D91, M31

1. Introduction and Theoretical Background

In the field of marketing there is increasing interest in digital interactions, especially those that occur in the social media between the customers (Heinonen, 2011). Customers are no longer passive recipients of marketing messages; they also contribute to content creation and sharing (Stewart & Pavlou, 2002) since social media allows users to ask questions and seek advice from others, and further, it allows experts to take a leadership role and present themselves as influencers.

Electronic word of mouth (henceforth: eWOM) occurs in social media when customers search for advice or informal information using an application which allows communication between its users. eWOM in social media comprises three main aspects: the first is opinion giving, the second is opinion seeking, and the third aspect is pass-along behaviour. Information giving behaviour is related to opinion leaders who are defined as individuals who have knowledge and expertise; therefore, they are considered as information

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sources by opinion seekers (Feick, Price, & Higie, 1986). Information seeking behaviour is related to opinion seekers who search for leaders' recommendation and advice when they want to purchase a product (Flynn, Goldsmith, & Eastman, 1996). Pass-along behaviour can be defined as behaviour that allows information to flow between users in a way that may not include seeking or giving advice through social media interactions (such as like, comment and share); it appears in the cyberspace because of its interactive nature, which allows users to undertake multiple roles in terms of giving and seeking for advice as customers' preferences for a particular brand and their opinion on a particular product or idea can be seen by their social community regardless of their personality as opinion leader or seeker (Sun, Youn, Wu, & Kuntaraporn, 2006). The most important characteristic of this behaviour is its great dependence on social relationships between users, whether family relationships or community relationships such as brand community.

Given that the essence of social media is social communication between individuals, the variables of social relationships are important for the understanding of how eWOM occurs. There are a number of studies on the effect of social relationship variables on eWOM in social media (e.g. Chou & Kim, 2011; Sharma & Rehman, 2017). The present study aims to contribute to this trend by comparing the above effects on young customers from two distant cultures: Hungary and Syria. Accordingly, the broad research question is formulated as follows: Is there a difference in the impact of social relationships on the electronic word of mouth in social media between young Hungarian and Syrian consumers?

1.1. Social relationships and eWOM in social media

Social media users, either opinion leaders or opinion seekers, engage in eWOM because of the users' desire to build new social relationships and keep in touch with their current personal network. Users of social networking sites help each other make decisions (e.g. purchasing decisions) by exchanging information and experiences with their social networks. Studying the variables of social relations greatly helps in understanding the mechanism of eWOM and the factors that contribute to generate it (Chu & Kim, 2011). According to Chu & Kim (2011) there are four main variables that determine the nature of social relationships and their impact on word of mouth: (1) tie strength (2) homophily (3) trust (4) interpersonal influence.

Tie strength refers to the power of the relationships between members of a network, for example "the potency of the bond between the customer and service provider" (Mittal, Huppertz, & Khare, 2008 p. 195). It can be measured through several variables, such as the importance of the social relationship between the sender and the receiver, the extent to which users are close to each other, and the frequency of communication between them (Brown & Reingen, 1987). According to Granovetter (1973 p. 1361) there are two types of social ties: strong and weak ties based on the "combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services that characterize the tie". The first one is the type in which the relationship is strong, close to the person and has significant influence and emotional support, such as friends and family. On the other hand, the second type, in which the relationship is weaker and does not have a significant impact on the person, does not have emotional support unlike the first, and consists of a wide range of acquaintances and colleagues (Pigg & Crank, 2004). Several researchers have confirmed that tie strength is one of the most significant factors that affect the traditional and electronic word of mouth (e.g. De Bruyn & Lilien, 2008; Wallace, Buil, & De Chernatony, 2012). Strong ties have been found more reliable sources than weak ties, especially for word-of-mouth receivers who prefer to obtain information from close sources such as family and friends (De Bruyn & Lilien, 2008).

Homophily is the degree of similarity between the individuals who interact in terms of age, education, interests, values and beliefs, while heterophily is the degree to which individuals who interact are not alike in many aspects (Rogers & Bhowmik, 1970). Homophily has been studied mainly in the communication

literature, but recently it has been given attention in marketing studies with the advent of social media, as the presence of brands within these sites requires them to interact with their customers. It is important that the customer feels that the brand and its employees are similar to him, have the same values and beliefs, and its website provides content that matches the characteristics and interests of the customer, as the more similar customers are to the brand, the more they interact with its contents (Kim, Kandampully, & Bilgihan, 2018). Moreover, customers feel more satisfied when they feel that other customers are similar to them and have the same characteristics, which motivates them to interact with them and thus engage in eWOM in its various forms (giving, seeking and passing-along) (Hanks, Line, & Yang, 2017). In social networking sites Thelwall's (2009) study showed that similar demographic characteristics such as education, attitude and age are reasons for joining social networking sites and engage in eWOM. On the other hand, Kim and Chu's (2011) study found that the similarity with friends has negative effect on sending information as consumers hesitated to give opinion that may not match network members' values and interests.

Trust is defined as relying on a particular trustor in making decisions and believing in his/her credibility (Moorman, Deshpande, & Zaltman, 1993). Since customers exchange information among themselves if they trust each other, trust plays a major role in customers' desire to engage in eWOM, which in turn will affect their purchasing decision (Wang, Yeh, Chen, & Tsydypov, 2016). In the context of viral marketing, users receive endless messages, emails and information every day and they ignore many of them for several reasons, for example due to lack of confidence in the source of the content so trust between contacts plays a significant role in the arrival of information to a large number of customers through one of the most important dimensions of eWOM, namely pass-along behaviour (De Bruyn & Lilien, 2008). Although customer reviews and comments are considered more credible than the traditional promotional mix, they are still viewed as unreliable due to their anonymous source. Social media, by adding the element of pass-along behaviour to the two basic elements of giving opinion and seeking opinion, has brought about a significant change in the traditional and electronic word of mouth mechanism. Now consumers are involved in eWOM since, after trying out a product, they can pass this experience to their friends by sending a message, commenting on the brand website of the product or by sharing a specific post and thus they influence their friends who trust them (Wang, Yeh, Chen, & Tsydypov, 2016).

Interpersonal influence relates to social conformity, which can be defined as thinking and possessing behaviours that are consistent with the beliefs and values of the group to which a person belongs, as people judge a certain behaviour correct if they see others doing it, and when more people do the same act, additional people will do it and the acceptance of people within the group will increase as well (Coleman, 2004). Society or group pressures the individual to accept certain opinions and behaviours, and the individual's compliance with the beliefs and norms of the community results from the desire to belong to that particular community (Hansen & Lee, 2013). Several studies have shown that interpersonal influence is one of the most important social factors that affect the decision-making of the consumer, and the more susceptible the customer is to interpersonal influence, the more likely (s)he is to engage in eWOM (Bearden, Netemeyer, & Teel, 1989; Chu & Kim, 2011; Castellano & Vincent, 2017).

Interpersonal impact has been classified in the literature in two dimensions: *normative and informational influences* (Bearden, Netemeyer, & Teel, 1989). The customer's tendency to adopt behaviours and actions that are consistent with the expectations and beliefs of others in order to achieve reward or avoid consequences is known as normative influences. Informational influences, on the other hand, refer to the tendency to accept information provided by knowledgeable others as evidence of reality serving as a guide in the search for the right brand and product (Bearden, Netemeyer, & Teel, 1989; Castellano & Vincent, 2017). In social media, users are subject to interpersonal influences, whether normative or informational, which in turn influence how they engage in eWOM. In terms of normative influence, users are expected to acquire

products and adopt ideas in line with the culture and beliefs of the community and thus they are expected to engage in eWOM to obtain the conformity of the community to which they belong, and regarding informational influence, users are expected to participate in the eWOM in order to obtain expert information before decision-making (Chu & Kim, 2011).

1.2. The cultural value of individualism and eWOM

Professor Geert Hofstede was perhaps the best-known theorist and researcher to provide a model of culture initially based on four cultural value dimensions: power distance, individualism/collectivism, masculinity/femininity and uncertainty avoidance; long-/short-term orientation and indulgence/restraint were later added to the model (Hofstede, Hofstede, & Minkov, 2010). The sample of Hofstede's study was large and international and the data analysis techniques which were used at that time were advanced. His study offered a sophisticated model of cultural differences which made it easy to include culture as a variable in various models (Taras & Steel, 2009). Although there are more recent dimension-based models, e.g., the project GLOBE and the Trompenaars model, our study relies on Geert Hofstede's model since Syria is not mentioned either in the Globe, or in Trompenaars & Hampden-Turner (2020). In our study we concentrate only on the individualism/collectivism dimension, which relates to whether people's self-image is defined in terms of "I" or "We", as our study investigates the impact of social relationships dimensions which are related to the degree of dependence of individuals on each other in the decision of engaging in eWOM.

Individualism vs. Collectivism indicates the degree to which members of a society are integrated into groups. Individualism is a characteristic of cultures in which the relations between members of the society are not very strong, as the individual takes care of himself and his immediate family; collectivism, on the other hand, relates to the culture of a society in which individuals are integrated with each other at a higher level than the immediate family, as relations are coherent with uncles, grandparents, etc. (Hofstede, 2011). In individualistic societies, individual goals are more important than collective goals, in contrast to collectivistic societies, in which members pay more attention to group goals than to their personal goals as collectivism manifests itself in loyalty and commitment to the family and the in-group. The individual in individualistic societies has several social interactions, but the interactions are short and not very intimate, unlike the individual in collectivistic societies who does not have many social interactions, but interactions last for a long time and are more intimate (Hofstede, Hofstede, & Minkov, 2010; House et. al., 2004). According to Hofstede, Syria is a collectivistic society with a low score of 35, whereas Hungary is an individualistic society with a high score of 80 (Hofstede, Hofstede, & Minkov, 2010).

Regarding the first dimension, *tie strength*, societies of a collectivistic nature maintain strong social relations, both online and offline (Farias, 2017) and the influence of tie strength on eWOM could be higher and more direct in collectivistic societies than in individualistic societies. Thus, the first set of hypotheses is formulated to examine the difference in the impact of tie strength on eWOM in social media between Syria and Hungary:

H1: Tie strength with social media contacts has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media.

While the second and third dimensions, *homophily* and *trust*, do not have a direct effect on collectivistic societies more than on individualistic ones, they exert a positive impact on the strength of the relationship, which is stronger in collectivistic societies. Thus, the indirect homophily influence on eWOM could be higher in collectivistic societies than in individualistic societies (Farias, 2017). Hence, the following hypotheses are formulated to explore the difference in the impact of homophily and trust on eWOM in social media between Syria and Hungary:

H2: Homophily with social media contacts has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media.

H3: Trust in social media contacts has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media.

As for the last dimension, *interpersonal influence*, previous studies showed that interpersonal influence affects members of collectivistic cultures more than members of individualistic cultures as societal norms and traditions determine how individuals behave (Lee & Kacen, 2008). Thus, the direct influence of interpersonal influence on eWOM could be higher in collectivistic societies than in individualistic societies and the following hypotheses are put forward to explore the difference in the impact of normative influences and informational influences on eWOM in social media between Syria and Hungary:

H4: Susceptibility to normative influences has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media.

H5: Susceptibility to informational influences has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media.

2. Research Elaboration

The present study reviewed previous research on social relationships in social media and their effects on the interaction of customers through giving, seeking or passing along the information, which in turn leads to eWOM between customers and their friends. Hypotheses from existing theories were developed in order to test them empirically by collecting data using the survey strategy through distributing a questionnaire to a sample of Syrian and Hungarian respondents in an attempt to gain results that support or oppose the existing theories. Therefore, the research reported in this paper fits the positivist philosophy (Saunders, Lewis, & Thornhill, 2009). Positivism is linked to deductive research and quantitative designs (Deshpande, 1983).

In line with the quantitative design and survey strategy which were adopted, the data were collected by means of an anonymous self-administered questionnaire, which was created by using Google forms. The self-administered questionnaire was adopted since it allows for remote data collection, its cost is low and it is economical also in terms of researcher time and effort.

2.1. Questionnaire items

The questionnaire contained validated items from previous studies that relate to the dimensions chosen; these studies (to be presented below) employed a five-point Likert scale to measure the data.

To measure tie strength, three statements were adopted from Chu & Kim's (2011) measure. The first item related to the frequency of respondents' communication with their social media friends, whether it occurs "never", "rarely", "occasionally", "frequently" or "very frequently"; the second statement was about the importance of respondents' relationship with their friends, if it is "not important", "slightly important", "neutral", "important" or "very important", while the third item concerned the degree of respondents' closeness to their friends in social media, whether it is "not close", "slightly close", "neutral", "close" or "very close".

The measures of homophily were adopted from McCroskey et al.'s (1975) measure by using three statements. The first one was about the similarity of respondents' thinking to that of their social media friends, whether they "never think like me", "rarely think like me", "sometimes think like me", "very often think like me" or "always think like me". The second item concerned the similarity of respondents' character to that of their social media friends, if it is "completely different from me", "different from me", "neutral", "similar to me", "completely similar to me", while the third item related to the similarity of respondents'

behaviour to that of their social media friends, whether they “never behave like me”, “rarely behave like me”, “sometimes behave like me”, “very often behave like me” or “always behave like me”. The rest of the items were measured by a five-point Likert scale, ranging from “strongly disagree” to “strongly agree” with a neutral anchor in the middle.

To examine trust, we adopted two items from Lin’s (2006) measure which were about the degree of respondents’ trust in their social media friends and the degree of respondents’ reliance on them as information source.

Normative influence and informational influence were assessed by adopting items of Bearden et al.’s (1989) measure, seven items for normative influence and four items for informational influence. Regarding normative influence, the items concerned the importance of others’ liking and approval of the brands to be purchased by the respondent, purchasing products and brands that are expected from others, achieving a sense of belonging by purchasing the same products and brands as others purchase, looking for brands and products that make good impressions on others, buying the same brands that others buy if the respondent wants to be like them and identifying with other people by purchasing the same products and brands as they purchase. As for informational influence, the items related to whether respondents ask their friends about the product in which they do not have enough experience, if they ask their friends about the best alternative available from a product class, whether respondents ask their friends about a product before they buy it and if they observe what others buy and use to make sure that they buy the right product.

To measure eWOM behaviours we used three items for opinion giving behaviour and four items for opinion seeking which were adopted from Flynn et al. (1996) and four items for opinion passing which were adopted from Sun et al.’s (2006) measure. With regard to opinion giving, the items were about the degree to which respondents persuade and influence their friends on social media to buy the products which they buy and the response degree of their friends on social media to their advice. As for opinion seeking, the items related to the degree of respondents’ dependence on their friends’ opinion and advice, the degree of their friends’ influence on their choice of products and the degree of their comfort with buying a product after getting the opinions of their friends. Finally, opinion passing items concerned the desire of respondents to share social media friends’ opinions about product with others, either positive or negative opinions or both, and the desire of respondents to share interesting opinions about products from one group to another on social media.

2.2. Sample and procedure

The questionnaire was developed in English and then translated into Arabic and Hungarian by the authors, who are native speakers, in an effort to eliminate the sampling bias to some extent, i.e., not to exclude systematically respondents who do not speak English. The link of the questionnaire was posted on some Facebook groups and also shared among acquaintances of the authors, so the convenience sampling method was selected, which is the easiest way to obtain the data, in order to form a suitable sample size. With the convenience sampling technique, it is supposed that the target population will be represented by the subset of population and the researcher selects a subset of participants who are accessible due to time and cost constrictions (Saunders, Lewis, & Thornhill, 2009, p. 241).

Data collection took place from 4th to 17th April, 2022. A total of 243 individuals filled in the questionnaire, 56% of whom was Syrians (135) and 44% was Hungarians (108). Of the 243 participants, the final sample of 203 respondents was used for data analysis after eliminating respondents older than 35 years since we were planning to study those who were under 18 years old in 2004, when Facebook was released. Facebook is the most important social media based on the number of users and the largest segment group of Facebook users is between the ages of 25 and 35 based on Statista database company; therefore the final

sample was 56% Syrians (113) and 44% Hungarians (90). In the Syrian sample 2 respondents belonged to the “<20” age segment, 24 respondents to the “21-25” segment, 61 respondents to the “26 -30” segment and 26 respondents to the “31-35” segment representing 1.8%, 21.2%, 54% and 23% of the sample. The Hungarian sample consisted of 27 respondents in the “<20” age segment, 42 respondents in the “21-25” segment, 16 respondents in the “26-30” segment and 5 respondents in the “31-35” segment representing 30%, 46.7%, 17.8% and 5.6% of the sample. It is noted that the Hungarian sample includes significantly younger ages than the Syrian sample, and the reason for this may be due to the difference in the nature of society with openness towards social media, as Hungarian young people seem to be more familiar with social media. Data was analysed with the SPSS 26 programme.

2.3. Validity and reliability

The translation of the questionnaire into the native language of the respondents, the use of pre-validated items and the pre-test on a total of 10 Arabic and Hungarian respondents are believed to cater for the face, construct and content validity of the questionnaire. Concurrent validity, i.e. “the criterion on which cases are known to differ and that is relevant to the concept in question” (Bryman, 2012, p. 171) was considered through the introduction of the age criterion; the responses of 40 subjects over 35 years of age were excluded in an effort to study only respondents who are believed to keep up with the latest social media platforms.

Cronbach’s Alpha coefficient was used to test the consistency of measures. As shown in Table 1, most indicators yielded Cronbach Alpha scores higher than 0.7, which is considered a very good level of internal reliability. There is lower correlation in case of the trust measure (0.641), which is thought to be due to the low number of items and thus considered acceptable (Bryman 2012).

Table 1: Internal reliability of measures

Indicators (construct)	Cronbach’s Alpha	N of Items
Tie strength	0.845	3
Homophily	0.817	3
Trust	0.641	2
Normative influence	0.851	7
Informational influence	0.750	4
Opinion giving	0.846	3
Opinion seeking	0.864	4
Opinion passing	0.857	4

(Source: own data)

3. Results and Discussion

Regression analysis was carried out to test the hypotheses. Adjusted R-square values were evaluated as follows: 0.1-0.3: weak correlation, 0.4-0.6: moderate correlation, 0.7-0.9: strong correlation (Dancey & Reidy, 2007). In the present research, in case the correlation coefficient was lower than 0.1 but the impact was found significant ($p < 0.05$) we did not reject the hypothesis since it means there is very weak impact of the independent variable on the dependent variable.

3.1. H1: Tie strength

As shown in Tables 2-4, the regression analysis revealed the significant positive impact of tie strength on opinion giving, opinion seeking and opinion passing for the Syrian sample while the impact was not significant in case of the Hungarian sample. Thus, H1 ‘Tie strength with social media contacts has a more

positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media' was supported by the analysis and accepted.

Table 2: Regression analysis for impact of tie strength on opinion giving

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.333 ^a	.111	.103	13.808	.000 ^b	.272
Hungarian	.136 ^a	.018	.007	1.649	.202 ^b	.146

Table 3: Regression analysis for impact of tie strength on opinion seeking

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.203 ^a	.041	.033	4.769	.031 ^b	.187
Hungarian	.195 ^a	.038	.027	3.495	.065 ^b	.220

Table 4: Regression analysis for impact of tie strength on opinion passing

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.320 ^a	.102	.094	12.639	.001 ^b	.284
Hungarian	.001 ^a	.000	-.011	.000	.993 ^b	.001

3.2 H2: Homophily

As shown in Tables 5-7, the regression analysis showed no significant impact of homophily on opinion giving, opinion seeking or opinion passing either for the Syrian sample or for the Hungarian sample. Thus, H2 'Homophily with social media contacts has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media' was not supported and rejected as homophily with social media contacts does not seem to have a more positive effect in Syria than in Hungary on eWOM in the social media.

Table 5: Regression analysis for impact of homophily on opinion giving

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.175 ^a	.031	.022	3.511	.064 ^b	.186
Hungarian	.059 ^a	.003	-.008	0.304	.583 ^b	.085

Table 6: Regression analysis for impact of homophily on opinion seeking

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.127 ^a	.016	.007	1.830	.179 ^b	.152
Hungarian	.019 ^a	.000	-.011	.031	.861 ^b	.028

Table 7: Regression analysis for impact of homophily on opinion passing

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.102 ^a	.010	.002	1.175	.281 ^b	.118
Hungarian	.082 ^a	.007	-.005	.600	.441 ^b	.119

3.3 H3: Trust

As shown in Table 8, the regression analysis revealed no significant impact of trust on opinion giving for the Syrian sample but significant positive impact for the Hungarian sample. With opinion seeking and passing, significant positive impact of trust was found both for the Syrian sample and for the Hungarian sample (Tables 9-10). Thus, H3 'Trust in social media contacts has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media'

was not supported by the analysis and rejected as trust in social media contacts does not seem to have a more positive effect in Syria than in Hungary on eWOM in social media.

Table 8: Regression analysis for impact of trust on opinion giving

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.165 ^a	.027	.018	3.106	.081 ^b	.139
Hungarian	.289 ^a	.084	.073	8.030	.006 ^b	.340

Table 9: Regression analysis for impact of trust on opinion seeking

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.203 ^a	.041	.033	4.790	.031 ^b	.194
Hungarian	.340 ^a	.115	.105	11.468	.001 ^b	.418

Table 10: Regression analysis for impact of trust on opinion passing

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.235 ^a	.055	.047	6.497	.012 ^b	.216
Hungarian	.240 ^a	.057	.047	5.357	.023 ^b	.283

3.4 H4: Susceptibility to normative influences

As shown in Tables 11-13, the regression analysis showed significant impact of normative influences on opinion giving, seeking and passing for both the Syrian and the Hungarian sample. Thus, H4 ‘Susceptibility to normative influences has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media’ was not supported and rejected, since, according to the results, Hungarian young adults are more positively affected than their Syrian counterparts.

Table 11: Regression analysis for impact of normative influences on opinion giving

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.400 ^a	.160	.152	21.136	.000 ^b	.439
Hungarian	.496 ^a	.246	.238	28.736	.000 ^b	.543

Table 12: Regression analysis for impact of normative influences on opinion seeking

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.425 ^a	.180	.173	24.421	.000 ^b	.525
Hungarian	.492 ^a	.242	.234	28.161	.000 ^b	.565

Table 13: Regression analysis for impact of normative influences on opinion passing

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.337 ^a	.114	.106	14.260	.000 ^b	.403
Hungarian	.500 ^a	.250	.241	29.259	.000 ^b	.549

3.5 H5: Susceptibility to informational influences

As shown in Tables 14-16, the regression analysis showed significant impact of informational influences on opinion giving, seeking and passing for both the Syrian and the Hungarian sample. Thus, H4 ‘Susceptibility to informational influences has more positive effect on young adults in Syria than in Hungary on (a) giving opinion (b) seeking opinion (c) pass-along behaviour in social media’ was not supported and rejected, since, according to the results, Hungarian young adults are more positively affected than their Syrian counterparts.

Table 14: Regression analysis for impact of informational influences on opinion giving

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.221 ^a	.049	.040	5.700	.019 ^b	.277
Hungarian	.366 ^a	.134	.124	13.594	.000 ^b	.436

Table 15: Regression analysis for impact of informational influences on opinion seeking

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.427 ^a	.183	.175	24.808	.000 ^b	.603
Hungarian	.556 ^a	.309	.301	39.410	.000 ^b	.694

Table 16: Regression analysis for impact of informational influences on opinion passing

Nationality	R	R Square	Adjusted R Square	F	Sig.	β
Syrian	.331 ^a	.109	.101	13.629	.000 ^b	.450
Hungarian	.543 ^a	.295	.287	36.775	.000 ^b	.649

3.6 Overview and discussion of the findings

On the basis of the above statistical analyses, which were used to test the validity of the hypotheses, only the first hypothesis was accepted whereas the other four were discarded. Table 17 summarizes the findings in terms of what effect the respective indicators have been found to exert on young adults in Syria and Hungary with regard to eWOM.

Table 17: Overview of findings

Indicators	Syria	Hungary
Tie strength impact on opinion giving	weak positive	N/A
Tie strength impact on opinion seeking	weak positive	N/A
Tie strength impact on opinion passing	weak positive	N/A
Homophily impact on opinion giving	N/A	N/A
Homophily impact on opinion seeking	N/A	N/A
Homophily impact on opinion passing	N/A	N/A
Trust impact on opinion giving	N/A	weak positive
Trust impact on opinion seeking	weak positive	moderate positive
Trust impact on opinion passing	weak positive	weak positive
Normative influence impact on opinion giving	moderate positive	moderate positive
Normative influence impact on opinion seeking	moderate positive	moderate positive
Normative influence impact on opinion passing	moderate positive	moderate positive
Informational influence impact on opinion giving	weak positive	moderate positive
Informational influence impact on opinion seeking	moderate positive	moderate positive
Informational influence impact on opinion passing	moderate positive	moderate positive

(Source: own compilation)

Thus, the findings indicate that tie strength has a positive impact on eWOM in Syria but does not have an impact in Hungary, therefore, the influence of tie strength on eWOM is higher among young adults in collectivistic societies than in individualistic societies, which confirms the findings discussed in Farias (2017). As for homophily, the results showed that there is no impact of homophily on eWOM in either Syria or Hungary, therefore the influence of homophily on eWOM does not seem to differ in collectivistic and

individualistic societies. A weak positive impact of trust was found in Syria on opinion seeking and opinion passing but not on opinion giving, which means that trust in social media friends plays an important role in young Syrian opinion seekers' information seeking and passing, while Syrian opinion leaders give their opinion regardless of the degree of trust in their social media friends. On the other hand, in Hungary both opinion leaders and seekers are affected by trust when they want to give or seek information from others; however, Hungarian opinion seekers are more affected than opinion leaders and therefore, regarding the impact of trust, it does not seem to make a difference whether the society is collectivistic or individualistic, which contradicts the findings discussed in Farias (2017).

Normative influences have been found to exert a moderate positive impact on eWOM in both Syria and Hungary, which means that cultural value differences have no effect as members of both collectivistic and individualistic societies seem to be positively affected by their normative influences when they want to engage in eWOM. Finally, for Syrian young people, informational influences have weak positive impact on opinion giving and moderate positive impact on opinion seeking and passing, which indicates that opinion leaders are affected by informational influences less than opinion seekers, while in Hungary informational influences exert moderate positive impact on both opinion seekers and opinion leaders, so Hungarian opinion leaders are affected more than their Syrian counterparts even though Hungary is considered an individualistic society while Syria is a collectivistic society, which contradicts the findings discussed in Lee and Kacen (2008).

4. Conclusions

eWOM through social media has become a critical factor in marketing activities, which may vary from country to country according to many factors, including cultural ones. In this study, the difference in the effect of young adults' social relationships on eWOM in social media between two different cultures was tested. The results indicate that tie strength has positive impact on eWOM in Syria (and to a lesser extent in Hungary as well) confirming the findings of previous studies (De Bruyn & Lilien, 2008; Wallace, Buil, & De Chernatony, 2012), which claimed that tie strength is one of the most significant factors which affect the traditional and electronic word of mouth. At the same time, the findings of the present study contradict outcomes of previous studies regarding the positive (Thelwall, 2009; Wang, Walthe, Pingree, & Hawkins, 2008) and negative (Chu & Kim, 2011) impact of homophily on eWOM as the correlation analysis showed that there was no relationship between homophily and eWOM. As for the trust factor, our results confirmed the positive impact of trust on eWOM in Syria and Hungary in a manner consistent with prior investigations (Wang, Yeh, Chen, & Tsydypov, 2016), which discussed the significant role that trust in friends plays in creating a desire in clients to engage in eWOM. Similarly, the two dimensions of interpersonal influence (normative and informational) were found to have a positive impact on eWOM in Syria and Hungary, confirming the findings of previous studies (Bearden, Netemeyer, & Teel, 1989; Castellano & Vincent, 2017).

Regarding the effect of the cultural dimension, our results indicate that tie strength has a more positive impact on eWOM in Syria than in Hungary, while no homophily impact on eWOM was found in either. As for the other social relationships variables under investigation (trust, normative and informational influences), the results showed that they do not appear to have a more positive impact on eWOM in Syria than in Hungary, which means that even though Syria is considered a collectivistic society and Hungary an individualistic one, most social relationship variables do not exert a more positive impact on eWOM in Syria than in Hungary, therefore, our results did not agree with previous examinations (Farias, 2017; Lee &

Kacen, 2008) as individualism and collectivism are not apparent in Syrian and Hungarian young adult consumers' behaviour, at least as far as the impact of social relationships on eWOM is concerned.

The results and discussion of our research yields some suggestions for future researchers. The present study has found that there is very little cultural value-based difference in the influence of social relationships on eWOM in social media, which contradicts the results of previous studies (Farias, 2017; Lee & Kacen, 2008). Therefore, the study could be repeated in countries other than Syria and Hungary to verify the validity of these results. Moreover, we used convenience sampling to collect the data and a limited sample, which restrict the possibility of generalization, so future research could use the random sampling method with larger sample for more accurate information that helps generalization. Future research could investigate eWOM behaviour in each social media platform separately for example, focusing on how the behaviour of Facebook users may differ from that of Tik Tok users since different age groups seem to use these platforms. Another limitation of this study is that it investigates a limited set of social relationships dimensions that have an impact on eWOM via social media. Future studies could investigate other factors that may affect eWOM, such as the content of a published post and its multimedia. Finally, our study focused on young adults, who represent the majority of social media users, yet whose perceptions may not accurately reflect those of the total social media population. Future research could explore and discuss how eWOM behaviour in social media varies across generations.

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Does parental socio-economic status matter for the success of start-ups of first-time founders? Evidence from Germany

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Abstract. *The aim of this paper is to establish the influence of parental socio-economic status on the profitability and growth of first-time founders in Germany. Semi-structured interviews were conducted with 20 first-time founders to establish their socio-economic status, parental influence on their success as founders, and the impact of parental socio-economic status on their financial success. The main findings showed that the majority of participants believed that the high socio-economic status of parents had a significant positive effect on the financial success of new start-ups, although those from lower socio-economic backgrounds could also succeed. The characteristics of unequal social status were often expressed and the status of German as a nation with low social mobility was confirmed. However, the extent to which financial support and context networks supported founders from high socio-economic status families was difficult to ascertain as founders were often unwilling to admit its actual influence. In contrast, the parental influences on values and positive attributes relating to their success were more freely discussed. Based on the revenues and valuation of the start-up companies, two trends for first-time founder success were identified: the most successful founders had parents with high socio-economic status; some very successful founders demonstrated high social mobility, which is contrary to the existing data that social mobility in German is very low.*

Keywords: First-time founder, social mobility, start-ups, parental socio-economic status, Germany

JEL Codes: L26, M13

1. Introduction

The influence of family background is attributed to the success of many flourishing entrepreneurs, who created their businesses as start-ups (Marks, 2021), whether they founded the business as teenagers or later in life (Rudnika, 2021). Socio-economic status represented by important family contacts, financial support and access to quality education, are among the influences cited as contributing to the entrepreneurial success (Marks, 2021). However, these claims rarely derive from empirical studies, that can be validated as being statistically representative of successful start-ups. This evidence gap is supported by a systematic literature review of 92 empirical studies published between 1989 and 2019, which investigated the connection between entrepreneurship and the family role (Cardella et al., 2020). The main reason for the growth in studies during this period was identified as attempting to corroborate a relationship between entrepreneurial intention and parental influence but none of the 20 studies conducted in the United States or the 4 studies based in Germany had this objective. The German research was focused on the influence of a role model on a young person's intention to become an entrepreneur, when the role model made the most impact during the life cycle, and how the parental profession impacted entrepreneurial intentions. The only relevant finding to link

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entrepreneurial intention with the parental profession was that it was weaker if the parents were employed in the public rather than in the private sector (Fritsch and Rusakova, 2012).

Determinants of self-employment entry are a frequent topic in economic studies (Simoes et al., 2016). The review by Simoes et al. (2016) provides a comprehensive survey of the impact of individual factors, such as basic personal characteristics, family background, education and experience, health condition, nationality and ethnicity, and access to financial resources. Regarding the influence of parents, studies show that having a parent with self-employment experience is a crucial predictor of the decision to start a business (e.g., Andersson and Hammarstedt, 2011; Chlosta et al., 2012), with the influence taking place through the transfer of knowledge and skills (Barnir and McLaughlin, 2011; Pittino et al., 2018), the transfer of contacts (Kim et al., 2006), financial conditions (Hundley, 2006; Lindquist et al., 2015), or exposure to parental role models (Hoffmann et al., 2015). Parental influence is also confirmed by Soleimanof et al. (2021) and Rodriguez et al. (2009), who examined the impact of a parent's entrepreneurial passion and family capital characteristics on their children's entrepreneurial attitudes in the USA.

Regarding the success of start-ups, factors other than parental socio-economic influence are mostly emphasized and investigated (Santisteban and Mauricio, 2017; Skawińska and Zalewski, 2020; Zarrouk et al., 2021). These factors include experience in the industry (Hyder and Lussier, 2016), technological and managerial skills (Garcia-Muiña and Navas-López, 2007), experience in management (Hyder and Lussier, 2016), government support (Pugliese et al., 2016), and the organizational size of the start-up (Rojas and Huergo, 2016). Gelderen et al. (2005) also emphasize the factor of risk perception in the pre-startup phase, which can influence the start of a business and its subsequent success.

The very low proportion of studies that have been conducted in Germany on the subject of parental influence on entrepreneurial intention and new start-up success, demonstrate a significant weakness in knowledge of these relationships in new German enterprises. This is particularly relevant as there were approximately 21,600 start-ups in Germany (Startupdetector, 2022) employing approximately 415,000 people between 2018 and 2020 (Pfluger et al., 2021). Their economic importance is significant as they increase German competitiveness and innovation, and more than 20% are digital companies (Cedefop, 2018). Between 2018 and 2020, the number of employees working in start-ups increased by 55% whereas the growth in the number of employees in Dax 30 companies was just 1.3% from 2018 to 2019, and employee numbers declined by 2.2% from 2019 to 2020 (Schaible et al., 2021). Generally, start-ups generate more well-paid jobs for qualified people than established companies (Schaible et al., 2021).

Although the influence of the family environment is a highly studied topic in the field of self-employment research (Simoes et al., 2016), most studies focus on the influence of parents and socio-economic status on the decision to start a business (e.g. Eren and Sula, 2012; Chlosta et al. al., 2012), and do not take into account the success of the newly established business. Another large group of studies in this area presents analyses of the success factors of start-ups; however, these studies primarily focus on financial factors, the influence of the business environment, business experience, etc. (e.g. Gimmon and Levie, 2010; Skawińska and Zalewski, 2020), rather than a direct link between parents' socio-economic status and start-up success. In addition, the success factors of a start-up may depend on whether the founder already has business experience or whether he is a first-time founder (Feld and Cohen, 2019). Research focused on first-time founders and the success of their start-ups depending on the socio-economic status of the family is insufficient, moreover, to the best of our knowledge, it is absent in Germany. Research focused on first-time founders and the success of their start-ups depending on the socio-economic status of the family is insufficient, moreover, to the best of our knowledge, it is absent in Germany. Therefore, our study attempts to eliminate this research gap by examining the influence of parental socio-economic status on the

profitability and growth of start-ups attributed to first-time founders in Germany. The intention is to critically appraise parental influence on the success of new German enterprises and to outline the types of participation, which the founders' parents provided in the development of the human, physical and social capital associated with the profitability and growth of their first start-up

1.1. Innovation and Entrepreneurship

Entrepreneurship is frequently associated with specific personality traits and behaviours, for instance, risk taker, perseverance, energy, success focus, self-reliance, leadership, aggression, autonomy, money orientation, and desire for recognition (Gartner, 1988). Therefore, entrepreneurs have the emotional strength to accomplish their goals in highly challenging circumstances, and the cognitive capacity to acquire and apply knowledge (Pirhadi et al., 2021). Entrepreneurs founding new start-ups have specific stronger leadership behaviours, such as vision, financial acumen and networking, than non-founders who managed start-ups (Applegate et al., 2016). Entrepreneurship comprises two categories: habitual entrepreneurs that currently or previously owned several new businesses and novice entrepreneurs with no previous business experience but currently own or part-own a new business (Ropega, 2020).

The link between entrepreneurship and creativity is stressed in several definitions, whereas entrepreneurship is described as innovation management (Wee et al, 1994). Since innovation creates new value for users (Katz et al., 2010), it can be perceived as changing existing operations, introducing new technologies and generating economic growth (Schumpeter, 2010). Innovation and entrepreneurs are also linked to the stage of the business lifecycle (Tidd and Bessant, 2018), the entrepreneur identifies a new technology or a gap in the market to exploit and to create commercial and social value (Tidd and Bessant, 2021).

1.2. Start Up Companies: Economic Contribution

Start-ups are defined as new and independent, actively trading or employing a first worker (Luger and Koo, 2005) and are characterized by the vision of what the start-up should accomplish, the objectives it should meet, close relationships with customers and innovative, energetic employees (Giulati, 2019). Start-ups also experience risky financial contexts, which force them to commercialize rapidly to retain competitive advantage (Ries and Hickman, 2012). They are described by Startupdetector (2020) as “innovative, mostly digital companies no more than ten years old, that have significant growth and scaling potential and mostly address digital target markets.” Therefore, start-ups may be categorised as hardware or software start-ups (Westerheide, 2016). The Global Entrepreneurship Monitor (GEM) describes company formation as comprising three stages: nascent entrepreneurship, before the start-up is officially formed and registered; owning and managing the firm when it begins to operate officially; up to 3.5 years afterward. The 3.5 year stage is when the start-up becomes an established business (GEM, 2021). The failure rate is high overall 90% fail, and 20% within a year (Minaev, 2021).

In the German sector, new business founders are predominantly male, 82.4% of the total, whereas the proportion of female entrepreneurs is 15.1%, 0.5% lower than the EU average. Additionally, 88.8% of founders have a university education (Monitor.eu, 2021). Diversity in German start-up companies is also low, 82.6% were all male, 14.2% comprised mixed teams and 3.2% were all female (FFM, 2020). First-time founders are not necessarily very young, many establish companies after completing their Master's degrees at approximately 26 years old; 27.9% of founders were older than 36 years (Rudnika, 2021). Their major activity is the Business to Business (B2B) sector, 72.9% of the total (Monitor.eu, 2021).

1.3. Socio-economic Status

Socio-economic status is measured in terms of an individual's level of human, social and financial capital (American Psychological Association, 2021). It is complex, comprising subjective and objective elements (Navarro-Camillo et al., 2020) so that perspectives of socio-economic status assume that all societies have an unequal status structure (Hollingshead, 2011), which emphasises acquired wealth, status, reputation, respect, and residential location, rather than a person's age or ethnic origin (Villaba, 2014). Hence social inequality has increased over decades, marginalised the poor, and made access to education and technology more difficult. Additional barriers to upward mobility, improving an individual's life situation and well-being, include race, gender, cultural prejudices and social status (Jarman and Lambert, 2018). Entrepreneurship is found to enhance the social mobility of individuals and therefore reduce poverty (Solimano et al., 2013).

OECD ranking suggested that social mobility in Germany was lower than the OECD average of 38% and continues to decline. Downward mobility from the top earnings in Germany was one of the slowest globally, and a child in a poor German family was forecast to require 180 years to attain an income equivalent to the average German wage (OECD, 2018).

1.4. Entrepreneurs and Parental Influence

Parental influence on entrepreneurship is attributed to the transfer of knowledge, skills, values and attitudes required; knowledge of contacts; transfer of the information regarding financial matters; exposure to entrepreneurial role models (Simoes, Crespo, and Moreira 2016).

A range of empirical studies was appraised to identify the specific influences that encourage individuals to become entrepreneurs. For instance, Velez-Grajales and Velez-Grajales (2014) used data collected for the 2006 ESRU Social Mobility Survey, which was restricted to male children. The main finding was that a child was most likely to become an entrepreneur if his father had been an entrepreneur or worked in a large firm, or if the child's first employment was in a micro-enterprise. The social mobility of sample participants was also analysed for four factors: completed years of education, social class, income mobility and wealth as associated with long-term investment potential. Upward mobility was highest for entrepreneurs, but it was harder to achieve if parents came from lower social classes. This research is useful because entrepreneurship is linked to parental influence and higher social class but educational attainment was not found to be a factor. The limitation of Velez-Grajales and Velez-Grajales' (2014) is in the comparability of the findings since it was conducted in a developing country, whilst this study is based in a developed country.

A study conducted by Tarling, Jones and Murphy (2016) investigated how family business and exposure to family business ideas from family and extended family influenced final-year undergraduate students to become entrepreneurs. The major findings were that parents were very influential as positive business role models from a very early age, providing the kind of values that first-time entrepreneurs would possess; motivation to develop interests, career, and personality traits such as confidence, honesty, work ethic, accountability, high social capital and educational achievement. When the family relationship was characterised by high levels of trust, family members acted as mentors and encouraged/supported the new entrepreneur (Tarling, Jones, and Murphy 2016). The validity of this research is limited by the small sample and no information was sought to link parental influence with entrepreneurial success level when trading.

Male and female entrepreneurs are often attributed specific characteristics, skills and behaviours (Gupta, Wieland, and Turban 2019) for instance males were associated with successful enterprises whilst women were not (Cardella et al 2020). Males were considered more competent than women in leadership, less risk-averse, more change-orientated, less emotional and more independent (Buttner and Rosen 1988). Self-belief was the underlying reason why fewer women considered entrepreneurship as a career choice (Thébaud

2010). Societal stereotyping, career expectations, and socialisation processes were also barriers to entry to entrepreneurship for women, (Sullivan and Meek 2012). However, women entrepreneurs, whose families were part of their contact network, had a higher probability of gaining innovative or original information and support to launch and operate a new business (Greve and Salaff 2003). Social stereotyping of females is also frequently mentioned as a barrier to market success; accessing information, finance and labour was more difficult than for men, although this was mitigated when families were in their network (Sullivan and Meek 2012).

The existing research into parental influence on success, focuses on multiple countries and perspectives, whilst this study is specific to Germany. Therefore, the research question of this study is as follows:

RQ: To what extent does the socioeconomic status of parents predict the profitability and growth of the start-ups created by first-time founders in Germany?

2. Research Elaboration

2.1. Sample

The sample that comprises this research was provided by the German company Startupdetector, a provider of market data and information on the German start-up market (Startupdetector, 2020). The details of a total of 501 start-ups, which had been founded between 1 December 2017 and 31 December 2020, were made available. According to A. Bräutigam, the managing director of Startupdetector, this sample is derived from a total of 8136 German start-ups founded in the period, of which 5312 were first-time start-up companies. The final sample was randomly generated for this research by Startupdetector (personal communication, November 21, 2021). The first-time start-up companies as defined by Startupdetector (2020) are detected by reference to the German Trade Directory, which gives the name and date of inception. In addition, this research used data on the LinkedIn platform to check whether the start-up owner had previously founded a company abroad. Individuals that had held CEO positions in a passive holding, such as asset management or property, were not excluded since this experience was not relevant. The limitation in identifying a first-time start-up was a lack of knowledge regarding whether an individual co-founded a company but was not CEO. Each of the 501 start-ups was approached by email, telephone, or through professional social media LinkedIn, to ask for their participation in the research. The researcher experienced many refusals from the 501 start-ups contacted, but once 20 interviewees were identified, it was considered a sufficient cohort to gather a broad range of facts and opinions. The majority of participants are based in Baden-Württemberg and North Rhine Westphalia and their major characteristic features are the founder's age at initiation of the start-up, socio-economic status and potential social mobility represented by parents' highest qualification and current employment status.

The twenty experts in the sample (see Table 1) comprised 3 females and 17 males. When the interviews commenced, all females were aged over 30; ages were 31 years, 34 years and 38 years, and their highest qualification was Advanced Technical Certificate, Bachelor and Master's degree respectively. Their parents' highest qualifications were: secondary certificate for two mothers and one father, and a degree for another of the fathers, whilst the parents of one founder had no qualifications. A total of three parents were self-employed, both were the parents of one of the female founders.

Table 1: Characteristics of Study Participants

Code	Age Range	Gender	Highest Qualification	German State	Parents' Highest Educational Qualification		Parents' Occupation	
					Mother	Father	Mother	Father
E1	26-35	Male	Bachelor Degree	Baden-Württemberg	State Exam	Diploma	Teacher	Engineer
E2	26-35	Male	Master's Degree	North Rhine Westphalia	State Exam	State Exam	Teacher	Teacher
E3	26-35	Male	Master's Degree	Baden-Württemberg	Secondary School	Secondary School	Geriatric Nurse	Sales Representative
E4	18-25	Male	Secondary School	North Rhine Westphalia	State Exam	Secondary School	Teacher	HRM Administrator
E5	26-35	Female	Bachelor Degree	North Rhine Westphalia	None	None	Housewife	Driver
E6	18-25	Male	Secondary School	Mecklenburg-Western Pomerania	Bachelor Degree	Doctorate	Teacher	Doctor
E7	26-35	Male	Bachelor Degree	Baden-Württemberg	Vocational Training	Vocational Training	Dental Assistant	Sales Manager
E8	18-25	Male	Secondary School	Hamburg	Secondary School	Diploma	Geriatric Nurse	Bus Driver
E9	36-45	Female	Master's Degree	Saxony	Standard Education	Engineering Diploma	Dental Assistant	Engineer
E10	18-25	Male	Secondary School	Berlin	Bachelor Degree	Bachelor Degree	Legal Compliance	Sales Manager
E11	18-25	Male	Bachelor Degree	Hamburg	Bachelor Degree	Doctorate	Music Teacher Primary School	Board Director
E12	18-26	Male	Bachelor Degree	Baden-Württemberg	Secondary School	Bachelor Degree	Secretary Construction Company	Programmer at SAP
E13	26-35	Female	Advanced Technical Certificate	Baden-Württemberg	Secondary School	Secondary School	Self-employed Dental Assistant	Self-employed Therapist
E14	26-35	Male	Bachelor Degree	Baden-Württemberg	Diploma	Apprenticeship as Bank Clerk	Self-employed in HR	Banker Senior Consultant
E15	26-35	Male	Master's Degree	Bavaria	Secondary School	Bachelor Degree	Paralegal	Self-employed
E16	26-35	Male	Bachelor Degree	Rhineland-Palatinate	None	Electrical Training	Office Management	Telephone Systems Engineer
E17	36-45	Male	Doctorate	North Rhine Westphalia	Bachelor Degree	Vocational Technician	Housewife	Self-employed
E18	18-25	Male	Secondary School	North Rhine Westphalia	Secondary School	Secondary School	Beautician	Industrial Electrician
E19	26-35	Male	Master's Degree	North Rhine Westphalia	Apprenticeship	Technical Qualification	Cosmetician	Agriculture Responsible for a German district
E20	26-36	Male	Master's Degree	Baden-Württemberg	Doctorate	Doctorate	Employed by DAX Company	Doctor

The male founders comprised; eight founders initiating the start-up at 21 years or less, two were aged 16 years; 3 aged between 22 and 25 years; six founders aged between 26 and 35 years. The highest male qualifications were 6 Bachelor degrees, 5 Master's degrees, 1 Doctorate and 5 Secondary School Certificates. Their mother's highest educational level was 1 Doctorate, 4 Bachelor degrees, 4 vocational training, 7 secondary school, 1 no response. The highest educational level of fathers was 3 doctorates, 4 Bachelor Degrees, 6 vocational training, 4 secondary school. Both parents of 1 founder were self-employed, plus 2 mothers and 1 father. Nine fathers have professional employment, whilst four mothers were teachers.

2.2. Research Design

A subjective stance was taken in this research so that the research design is exploratory, reflecting the need for deep insight into a poorly understood phenomenon, and theory development employs the deductive approach (Bryman, 2016). Qualitative methods were applied for data gathering and analysis, primary data was collected using semi-structured interviews and logically sequenced open questions to elicit facts and opinions (Zikmund et al., 2013). Initially, 501 first-time founders were invited to participate, research purpose and confidentiality of contribution were explained (Ritchie and Lewis, 2013; Saunders et al., 2019). The purposive sample comprised the first 20 founders to respond; the expert knowledge of a small number of new founders was required to answer the research question; large numbers providing representative samples are not appropriate when saturation is reached, i.e. further data collection did not give new insights, as is common practice in qualitative research (Yin, 2013). The eight interview questions were pilot-tested and amended as required. The interviews were conducted between January and March 2022 using video conferencing platforms and recorded with prior permission (Saunders et al., 2019). Once the interviews had been completed, they were transcribed, translated into English and arranged by questions and sub-question; all 20 responses were amalgamated to provide greater ease of comparison. Content analysis was used to analyse the findings; systematic thematically based coding technique (Mayring, 2014), colour coding so that the different themes could be easily identified, and the findings of the research easily verified (Ritchie and Lewis, 2013). The main codes are illustrated in Table 2.

Table 2: Coding

Theme	Main Categories	Sub-Categories
Entrepreneurship (E)	Types of entrepreneur	Founder Non-Founder Habitual Novice
	Innovation	Innovation linked to entrepreneurs Open innovation Closed innovation
Start-Up Companies (SU)	Stages in start-ups	Start-up company formation Successful start-up Unsuccessful start-up Start-up performance
	Start-up types/categories	Software- and general start-up German Start-up
Socio-Economic Status (SS)	Social mobility in general	Upward social mobility Social status Barriers to upward mobility Social inequality
	Social mobility in Germany	No sub-categories
Entrepreneurs and Parental Influence (EPI)	Knowledge, skills and attitudes for entrepreneurial intent	No sub-categories
	Parental occupation	
	Parental financial support	
	Parental contact network	
	Social contacts such as peers and mentors contribute	

3. Results and Discussions

3.1. Parental Influence

The participants generally acknowledge the substantial influence that their parents had on their success as entrepreneurs in relation to personal qualities and values that supported successful new start-up enterprises. However, three were reluctant to admit that they had received financial support from the family, E1, E7, E16, which had helped them to be successful, and five insisted that their parents' contact network was not a relevant factor in establishing the start-up for instance:

"No investors and the angel investors did not come from parents' contact network." (E15)

Contact network.... That comes less from my parents, but more from my co-founder." (E16)

The most important influences whilst growing up were education, including understanding the value of qualifications, and knowing that there was always someone to rely on, especially financially, if the business failed.

"I definitely had parents who value education. Who also supported education....and come from both sides of the educated middle class. Well, my father was more of a technician, but overall, my paternal family is a bunch of academics. On the mother's side anyway...and that definitely helped that I initially had the will and the desire to study so far." (E17)

"My parents have always supported me in every way. I work a lot, so they have to be there for my daughter a lot.... supported me financially...maybe because they have always done it themselves for their own company...without my parents, I wouldn't be standing here today." (E13)

The acquisition of a range of personal qualities was repeatedly mentioned: for instance perseverance, ambition and being allowed the freedom to pursue own dreams, motivation, security and stability to be able to make mistakes and subsequently to be unafraid to do so, confidence, self-esteem and self-awareness, a sense of responsibility, respect for others, independence, the need to retain high principles and to be open to new ideas.

One participant emphasised that learning social skills had been the major influence on their entrepreneurial success and that retaining friendships from a very early age had also resulted in having good contacts for the business:

"The upbringingthe ability to act socially, to interact, to ensure early on those essential social skills are also conveyed, are educated and that you don't develop into a complete idiot from a human, interpersonal point of view, definitely has contributed to the fact that I think I still have friends from kindergarten today and that I am socially involved.....and this in turn has resulted in contacts that have actually pushed us very actively forward in our entrepreneurial development..... so... I think from that perspective it definitely helped the network of contacts work and serve the company." (E14)

Intellectual qualities were specifically mentioned by two participants, divergent thinking and creativity, and another understood the risk of learning chess from his father, and competitiveness from sports:

"Thinking outside the box and being actively interested in a wide range of topics... is very important.....my parents did it too, by teaching me chess and brain teasers early on, through a creative vein, through music, through the instrument I had learned, but also in a sporting way.. I was put in a tennis club." (E16)

"Think out of the box... I don't know if that has anything to do with my parents. They're both not really creative... well, yes, my mother is naturally creative but musically creative." (E11)

The high level of academic qualification of the two participant's parents, E11 and E17, the value they placed on education, and the support given to acquiring qualifications, instilled the ambition to achieve at school.

In addition, the family network's expectation of their success was emphasised as highly beneficial. Parental influence to encourage continual self-improvement, despite not realising how important this was at the time it was happening, and discussion with parents about how their careers had evolved were also factors.

"It was communicated to me...you have a certain personal responsibility...certain self-determination as a person, we want to give you that, but you are responsible for yourself....at some point, we won't be there anymore. Then you have to figure it out yourself... and these are just a bit of these values that have been conveyed to me. That's what I meant by liberal education. It's important to have a liberal upbringing....and if my dad hadn't had his doctorate in economics, I certainly wouldn't have been so ambitious at school." (E11)

"If I hadn't studied, if my parents hadn't urged me to get the university degree, I would probably not have created a start-up." (E3)

P3 also highlighted how learning to build stamina and to complete tasks that were not particularly liked had contributed to their success:

"My mother in particular taught me, even in the early years of my childhood, to follow through with things even if I didn't enjoy them that much...and this enabled me to develop a bit of stamina at a young age, which I now need every day." (E3)

In contrast P7 stressed that their parents' education had no influence on their success, since the parents were neither entrepreneurs nor participated in their business in any way.

A negative parental influence was mentioned twice by E4, which was being taught to please everyone so that when subjected to any criticism, their self-esteem was lost.

"What was negative, however, and I'm still struggling with this today, is that I think my mother raised me in a way that makes me always want to please everyone around me....she brought me up to be a bit too sweet...as a result, when I'm surrounded by people who say that my idea is too big, for example, I often feel bad and lose my self-confidence at that moment. This doesn't really make any sense, because that's not a negative thing...but in these moments, I somehow think that I have to please everyone. If that doesn't happen, then I've done something wrong, and then I think my self-confidence drops a bit. That's a bit of the negative side." (E4)

When specifically asked which aspects of childhood and adolescence had a negative impact on their success as an entrepreneur, the remarks varied and often none could be recalled. Amongst the significant remarks were that growing up in a small village had limited P1's self-expectation but later moving to a large wealthy location as a teenager instigated a more ambitious mindset, and school friends generating this was mentioned:

"I grew up in a small village in Brandenburg, and the people I met there, a lot of them, I would say, have rather stayed in their area or have been very... how can I best express it? Small-minded is perhaps the wrong word, but at least they don't think big or don't think beyond the horizon ...and I noticed that .. when we moved to the Weinstrasse in Rhineland-Palatinate when I was 17 years old, people there think differently. The children came from wealthy families....and they had completely different mindsets...some of the people I went to school with also started their own businesses there." (E1)

In contrast, E16 proposed that living in a small village provided the opportunity to develop communication skills, particularly in reference to potential conflict:

"My parents taught me more about how to get in touch with people. It's like this, I come from a small village and somehow everyone knows everyone...and it's so that you actually know how I react to different people. Especially in relation to the small village, where it's not so anonymous now, where you know exactly: Okay, the person is more of a hothead, you have to talk to them differently than to the calmer person. I actually learned that quite well in this microcosm of the village where I grew up. A rich network of contacts did not develop there." (E16)

The last part of the remark is also interesting and tends to align with E1's perception of inhabitants of small villages as being much less a source of the type of contact networks that support entrepreneurship success.

One participant, E9 had grown up in East Germany and as unification occurred, their mother had a high sense of insecurity, which passed to them which had implications for their approach to entrepreneurship:

"I always carry the fear with me...maybe subconsciously too....what if something goes wrong? And what do we do then?... a bit like that. So, I think it's something geographic. This East Germany issue, which has had a bit of an influence on me, comes from the development of my parents ... education, no, I don't think so. Family expectations... I think that for me it's a little bit about the pre-embossing and in East Germany, everyone is anxious anyway." (E9)

The inference from these remarks is that parental location and associated socio-economic status are significant success or failure factors.

The position of the individual in the family lineage was felt to be a strong factor by P16, who was the youngest member of the family and with a large age gap to older siblings. P16 felt that this had a negative effect on personal ambition because life was made too secure, and possibly resulted in overconfidence.

"I grew up with two siblings, both of whom are over ten years older than me, and I was born prematurely ... in the sixth month of pregnancy, which made sure that I was always very wrapped in cotton at home I was always very cared for with everything and as a result, growing up, I wasn't so much on my own that I somehow made sandwiches for myself in the morning before school. No, I got up, the cocoa was warm and my favourite jam was spread on my bread. Well, this having cared for too much might have hurt founding a company, and I then take some things too lightly." (E16).

Similarly, the negative impact of too much financial security was also inferred by two others: E17's father had high earnings and their mother was very satisfied with life; parental expectation of child working in large private/public corporate as was the case with E20 whose mother worked for DAX associated company.

Another negative effect was that E4's parents preferred not to be perceived as different from others, which raised mental doubts about the wisdom of initiating a start-up, whilst E7, who had parents that were not entrepreneurs and that felt unable to offer professional advice was considered a possible disadvantage.

3.2. Socio-economic Status

The participants were directly asked to comment on how the socio-economic status of parents correlated with the financial success of their first start-up. The socio-economic status of parents was evident from responses to several questions and P1 admitted that being given the opportunity to study at a private university, which parents needed the social status to pay for, facilitated them identifying the founders' institute of another university, which they stated would have been unlikely if they had attended a public university. In relation to the link between high socio-economic status and first success, E1 stated:

“None of the ones I know come from a weak social background....I can observe that the most successful companies in Germany have founders who come from private universities.....biggest successful founders in Germany that I know come from these schools and you can only get into these schools with a certain amount of money because they are really expensive. Or you need connections.” (E1)

However, another founder, E7, stated that they knew no founders who had become successful by using their parents’ contact networks.

Fourteen other founders considered that socio-economic success of parents had a positive effect on financial success, two also mentioned their connections, and three, E8, E10, E17, the security of knowing they would be supported if they failed. Conversely, eight participants expressed some doubt that this was true for all individuals from high socio-economic status families.

Founders, whose families were middle class rather than of higher socio-economic status, had more problems getting bank loans, whereas wealthy people had connections with potential investors according to two individuals; connections also being emphasised by two participants.

“My family maybe does not have a very high socio-economic status, but we are a normal middle class family. And in the beginning, I also had problems getting a loan from the bank. If my parents had had a few million more, getting a loan wouldn’t have been a problem.” (E3)

The opposing opinion expressed by four people, was that high socio-economic status and parental financial support was definitely not an influence on success, two suggested that it was likely to accelerate the initial stages, and would not necessarily lead to long-term success.

“I think that when the parents have more money, a little higher status, that perhaps accelerates the first steps. I do believe that a young person is more likely to found a limited liability company than a student who has little money and first has to save for their start-up, for example.” (E4)

Founders from financially poorer backgrounds learned to struggle, work hard and envisage success as a longer-term goal, one stressing the influence of parental values.

“I think that for mid to long-term success, those who don't come from such a prestigious family are more successful because they learned to struggle in their childhood. They learned to work, they learned that they don't get anything for free in life.... I believe that these people, no matter how bad the circumstances they come from, will overtake the quote-on-quote rich kids in the mid to long term. (E4)

These remarks were made by participants whose parents do not seem to have the highest socio-economic status.

These remarks are also interpreted in the context of the initial data provided by the entrepreneur regarding their parental background and the relative success of their start-up to date, Table 3. Based on the revenues and company valuations as the sole guideline, it appears that E6, E10, E11, E12, E15, E20 have all benefitted from the high socio-economic status of parents, who had gained educational qualifications and/or advantageous careers. In contrast, E3, E4, E8, E19 demonstrate examples of substantial social mobility in which parents’ influences were expressed in similar supportive, but contextually different upbringing. In contrast, it is difficult to categorize E14, whose parents do not have particularly high socio-economic status and whose significant social mobility is somewhat less evident.

Table 3: Start-Up Key Features, Progress to Date and Socio-Economic Background

Founder Age Currently	Highest Qualification	Year Founded	Employees	Revenues 2022 (Euros)	Business Valuation (Euros)	Sector	Parental Background Job/Highest Qualification
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E1	25	Bachelor	2022	9	50,000	750,000	Online Marketing	Teacher/Engineer; Diploma
E2	28	Master's	2020	6	100,000	n/a	E-Commerce	Teachers; State Exam
E3	30	Master's	2018	45	2 million	4 million	Food	Sales Representative; Secondary School
E4	22	Secondary School	2020	0	0	5 million	Social Media	Teacher/Administrator; State Exam
E5	35	Bachelor	2020	0	100,000	2.5 million	Career Platform	Housewife/Driver; none
E6	20	Secondary School	2020	12	100,000	5million	EduTech	Teacher/Doctor; Doctorate
E7	26	Secondary School	2019	0	25,000	200,000	FinTech	Dental Assistant/Sales Manager; Vocational Training
E8	22	Master's	2019	15	5 million	35 million	E-Commerce Social Media	Geriatric Nurse/Bus Driver; Diploma
E9	43	Master's	2018	8	500,000	n/a	Electronic Optical Equipment	Dental Assistant/Engineer; Diploma
E10	22	Secondary School	2020	9	0	6 million	Career Platform	Legal Compliance/Sales Manager; Bachelor
E11	21	Secondary School	2020	25	3 million	5 million	Online Marketing	Piano Teacher/Board Director; Doctorate
E12	25	Bachelor	2020	14	500,000	4 million	Travel	Secretary/Programmer; Bachelor
E13	35	Advanced Technical Certificate	2018	5	1.8 million	n/a	Healthcare	Dental Assistant/Therapist; Secondary School
E14	26	Bachelor	2019	6	>100,000	7 million	MedTech	HR/Senior Bank Consultant; Diploma
E15	28	Master's	2018	30	4.5 million	20 million	Electrical Engineering	Paralegal/Self-employed; Bachelor
E16	32	Bachelor	2019	2	200,000	800,000	E-commerce	Office Management/Telephone Systems Engineer: Electrical Training
E17	37	Doctorate	2018	0	No longer in business	No longer in business	MedTech	Housewife/Self-employed; Bachelor
E18	29	Secondary	2018	0	100,000	500,000	EduTech	Office Management/Systems Engineer; Secondary School
E19	30	Master's	2021	12	200,000	5.5 million	Electrical Engineering	Cosmetician/ Responsible for Agriculture German District; Technical Qualification
E20	34	Master's	2018	2	800,000	4.5 million	Beverage	DAX group company/Doctor; Doctorate

3.3. Discussion

The findings tend to confirm the perspectives of Baker (2014) regarding the inferences of socio-economic status on the financial success of organisations, and to a significant extent that socio-economic status is complex and multi-faceted owing to subjective opinions expressed by many participants (Navarro-Camillo et al., 2020). Many of the characteristics of unequal social status, such as wealth, status, reputation, respect, and residential location, were stressed (Villaba, 2014). The OECD (2018) findings that social mobility in Germany is low, are also indicated in this research, and disadvantaged talented children of poorer families regarding access to finance and resources such as contact networks (Dodin et al., 2021). However, the extent to which financial support and contact networks supported founders from high socio-economic status families was difficult to ascertain as founders were often unwilling to admit its actual influence. In contrast the parental influences on values and positive attributes relating to their success were more freely discussed (Tarling Jones & Murphy, 2016). This study also indicates that entrepreneurship can enhance social mobility of individuals and therefore reduce poverty in alignment with Solimano et al. (2013). The dimensions of parental support and influence on the success of the first start-ups, which result from the findings so far, are summarized in the diagram in Figure 1.

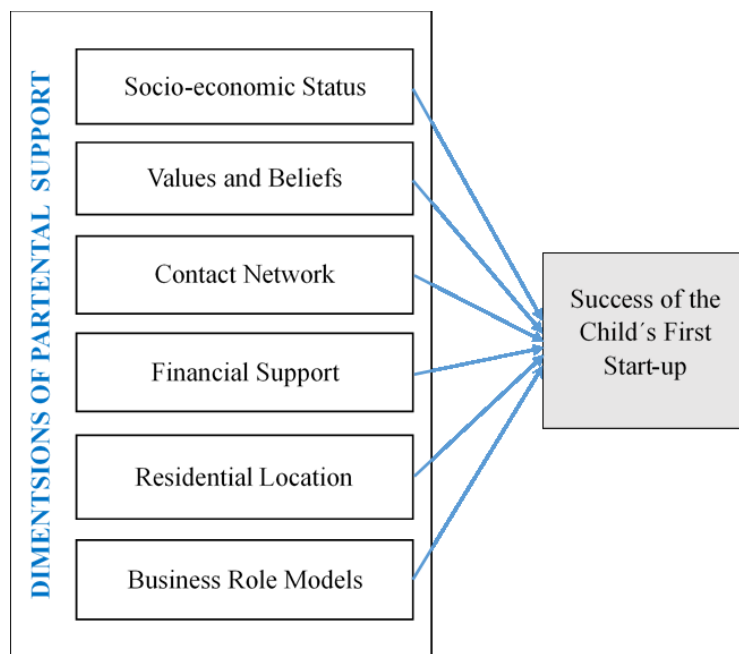


Fig. 1: Dimensions of Parental Support
 Source: Authors' own visualization

4. Conclusions

This research has made a significant contribution to enhancing knowledge about the impact of the socio-economic status of German parents on the financial success of new first-time start-ups. It has also confirmed the parental influence on the success of entrepreneurs from an early age emphasised in previous studies, and in considerably greater detail.

Based on our finding that the parental influence has a significant effect on the probability of success of a first-time founder's start-up in Germany, the following implications can be drawn. Public policy makers should be aware that programs and tax incentives for increased family support can be helpful in indirectly stimulating entrepreneurship and its success. Given that the family has considerable potential to provide first-time start-up founders with a unique form of support (which we can describe as social support), it will enable them to establish successful start-ups, which will have a positive impact on the performance of the entire economy. Investors, in turn, can use the results of this study when deciding on the choice of a start-up for their investment activities, because a good family background of the start-up founder is a prerequisite for a greater probability of an entrepreneurial success.

However, the main limitation of the study is the small sample so the findings cannot be considered representative of all new first-time German start-ups. The difficulty in acquiring convincing denials of parental socio-economic status also limits the credibility of the findings and needs to be addressed. Therefore, the recommendation for further research is to conduct a quantitative study with a representative sample of new German start-ups where the founder or co-founders are first-time entrepreneurs.

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Modeling Life Expectancy in Indonesia Using System GMM Model

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Abstract. *Life expectancy marks the success of efforts to provide basic rights, such as access to good health services. Lack of improvement in conditions or stagnation is often considered a cause for concern because it can lead to a decline in the health profile of the population driven by adverse socioeconomic status trends. Consequently, the determinants of modeling the life expectancy of males and females in Indonesia were carefully selected by collecting data in 34 Indonesian provinces from 2010-2020. The modeling was carried out using the Generalized Method of Moment (GMM) method with the GMM system model approach. The results showed that the availability of health infrastructure and environmental conditions, such as sanitation and access to safe drinking water are very important to support and guarantee access to health services needed by the community. Social and economic status, such as GRDP per capita, literacy, unemployment, and poverty also contribute to the increase in life expectancy of males and females in Indonesia. Furthermore, the realization of government policies in the health sector must be continuously evaluated for the sustainability of the infrastructure development acceleration program by prioritizing community welfare improvement.*

Keywords: Health Infrastructure, Health Conditions, Life Expectancy, Socio-economic Status, System GMM Model.

JEL Codes: I15, O15, C23

1. Introduction

Life expectancy (LE) is a measure of a country's public health (Hum et al., 2015), and the double-fold increase, which occurred in the last century is evidence of substantial advances in science and health (Jamison et al., 2013; Vallin & Meslé, 2009). Several studies have also been carried out in the fields of economics, medicine, public health, and political science to determine its influential factors (Muntaner et al., 2011; Selck & Deckarm, 2015).

A country is said to have an old population structure when the proportion of the elderly aged >60 years is ≥10% of the total population (Adioetomo & Mujahid, 2014). Furthermore, Indonesia is one of the countries with the tendency to have this type of structure because the proportion of old people is 7.6% (Badan Pusat Statistik, 2015), and this number is also expected to rise to 15.77% by 2035. This increase occurred along with Indonesia's life expectancy from 69.8 years in 2010 and is projected to be 72.4 years by 2035 (Badan Pusat Statistik, 2013). The aging population structure is an indicator of the success of achieving human development nationally due to improvements in nutrition, sanitation, advances in medical technology, health services, and increased education (Martínez & Oller, 2019).

UNDP (2019) reported that the Human Development Index (HDI) in 2018 was 0.707 and it was ranked 111 among 189 countries and regions. Indonesia was below the average of 0.750 for countries with high HDI and below the average of 0.741 for countries in East Asia and the Pacific. When compared to China and the Philippines, its HDI ranked 85 and 106, respectively. A previous report also revealed that countries with high HDI have high subscriptions to fixed broadband, which is 15 times faster and the adults are more than six times faster in education compared to others with low HDI.

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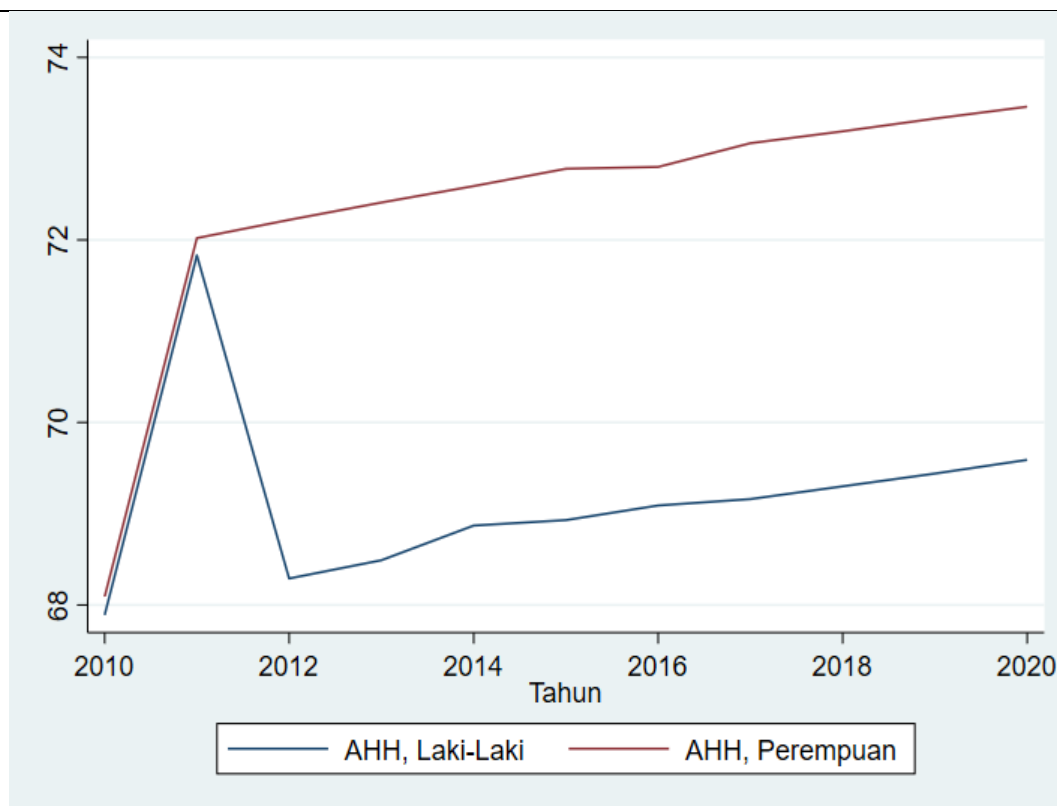


Figure 1. The Development of Life Expectancy (LE) for Male and Female in Indonesia, 2010-2020
 (Source: Central Bureau of Statistics, Author's Calculation)

The development of life expectancy (LE) in Indonesia during the decentralization era from 2010-2020 shows that females were higher than males. In 2011, the male LE was 71.83 years, while it decreased by 3.54 years to 68.29 years in 2012 and is expected to continue increasing. Since 2010, there has also been a continuous increase for females, and a value of 73.46 years was recorded in 2020. The difference between male and female life expectancy is caused by several factors, such as biological, socio-economic status, health, and environmental conditions.

Several studies on the impact of health infrastructure development, political conditions, and socio-economic status showed contradictory results. A previous study stated that investment in health infrastructure development can make community members more healthy (Amaghionyeodiwe, 2004; Craigwell et al., 2007). However, Monteiro & Turnovsky (2008) argue differently that it cannot improve the quality of human resources. Lack of access to healthcare facilities is caused by distrust of government programs as policymakers (Qureshi, 2009), economic conditions, such as budget constraints and recession (Gilmour et al., 2010), inadequate facilities, and people living in rural or semi-urban areas (Freed et al., 2013; Gupta et al., 2014; Habibullah et al., 2016).

The availability of infrastructure is important for the development of a country that can unlock potential, such as increasing employment, alleviating poverty, reducing income inequality, and improving economic growth (Negara, 2016; Salim & Negara, 2018; Kustanto, 2020). Engineer et al. (2008) and Mello & Pisu (2009) revealed that one of the factors affecting health development is accessibility, namely whether or not the health infrastructure is affordable by the community. This is because all residents do not live in urban areas, which often have complete equipment. Furthermore, equitable health human resources are one of the criteria that must be fulfilled in achieving development in the health sector.

Changes in LE are also influenced by the country's social status and political conditions (Shen & Williamson, 1997; Kabir, 2008), which are often used as variables in determining life expectancy (Navarro et al., 2006; Franco et al., 2004; Lin et al., 2012). Democratic countries can easily exercise their civil liberty rights to speak out and demand improvements in public services as well as act on their political opinions. The governments are also willing to listen and be encouraged to improve services that are closely related to the needs of the community (Lake & Baum, 2001; Gerring et al., 2011).

Based on the problems above, the increase in life expectancy can be considered good and bad. The good part is that it ensures improvements in the community's welfare and health, while the bad part involves an increase in the number of people suffering from non-communicable or communicable diseases. Therefore, this study aims to examine the impact of health infrastructure, political conditions, health conditions, environmental health, and socioeconomic status on male and female LE in Indonesia between 2010-2020. These determinants are very dynamic and constantly evolving, hence, it is important to further investigate their influence.

2. Literature Review

Constraints faced by several developing countries include the availability of infrastructure, political culture, and socioeconomic status (Todaro & Smith, 2012; Cournane et al., 2015; Chokkanathan & Mohanty, 2017). Lakshmi & Sahoo (2013) in Andhra Pradesh, India reported that healthcare infrastructures, such as the availability of hospitals, pharmacies, doctors, and the number of hospital beds had a positive and significant effect on health indicators, such as life expectancy. Similar results were also obtained by Grzywacz (2000), Amaghionyeodiwe (2004), Allin, Grignon, & Le, (2010), and Kim et al. (2017) where the equitable distribution of resources in an area was a determining factor for improving public health status. However, building infrastructures and the availability of these resources alone are not enough to achieve good status. This is because other factors, such as the operational efficiency, implementation, and maintenance of the health facilities in the country are also important (Robson et al., 2007). The causality relationship between CO₂, carbon emissions, health spending, and economic growth is bidirectional globally, while it is unidirectional in middle and upper-middle-income countries, except for low-income countries that do not show evidence of causality (Chaabouni & Zghidi, 2016).

Health is an example of a nation's success and vision, with increased longevity of 8 years since 1990 (The Lancet, 2019). According to the World Health Organization (WHO), to improve the welfare and health status of the community, it is very important to build synergies between the government and the community as the basis for achieving goals in a better direction. This cooperation is expected to help both parties take action and harmonize plans as well as set priorities for development in the health sector. Furthermore, cooperation, which is aimed at achieving common goals can be in various forms. For example, cross-border collaboration, such as the United Nations Office for South-South Cooperation (UNOSSC) and collaboration between Sudan, South Sudan, and Uganda (Taylor, 2016). It can also be in the form of cooperation between countries, such as members of the United Nations. In Asia, countries, such as Japan that have prefectures with similar backgrounds, history, culture, and geographical conditions are grouped into different regions. Previous studies revealed that there are different collaborations in several sectors, including the field of public health (Nomura et al., 2017).

The Indonesian government under the administration of Joko Widodo "Jokowi" currently believes that the availability of infrastructure in the country is poor, which led to social injustice. The current condition is better compared to when the economy was badly hit by the 1997 Asian monetary economic crisis. The Indonesian government is currently struggling to increase investment in infrastructure to a level that can encourage high economic growth as seen at the outset of the 1990s. They also realized that the health status of the community is important in responding to the current changes. Therefore, this study aims to examine the effect of health infrastructure development, political conditions, health conditions, and socio-economic status in 34 provinces of Indonesia on life expectancy. These determinants are very dynamic and continuously evolving, hence, it is important to investigate their influence.

3. Methodology

The data used in this study were obtained from the Indonesian Health Profile, Welfare Statistics, and Indonesian Statistics, which they were publicly accessible. Furthermore, this study examined the association of health and non-health variables with male and female life expectancy. The model used to analyze the determinants of LE was adapted from Kabir (2008), and then modified as follows:

$$LEMale = f(H, NH) \quad (1)$$

$$LEFemale = f(H, NH) \quad (2)$$

In equations 1 and 2, the health variable includes the number of general practitioners at the Public Health Center, specialist doctors, nurses, hospital beds, the ratio of the Public Health Center, the coverage of health insurance participation, health complaints, outpatient treatment, the number of new HIV and AIDS cases, percentage of babies who are exclusively breastfed, drinking water facilities, sanitation, toilet facilities, giving birth with the help of health workers, as well as the percentage of active family planning participation. Meanwhile, the non-health variables include GRDP per capita, poverty, inequality, unemployment rate, and literacy rate. Some of the independent variables were only available for females. Table 1 was created for the understanding of the variables used in the analysis.

Table 1: Definition of Variables Used in the Analysis

Notation	Meaning	Source
Dependent Variable		
LEMale	Male life expectancy (Percent)	Central Bureau of Statistics
LEFemale	Female life expectancy (Percent)	Central Bureau of Statistics
Independent Variable		
Socio-economic Variables		
PCGRDP	Gross Regional Domestic Product per Capita (Thousand Rupiah)	Central Bureau of Statistics
POVERTY	Percentage of poor people (Percent)	Central Bureau of Statistics
GINI	Income inequality (Index)	Central Bureau of Statistics
UNEMPL	Open unemployment rate (Percent)	Central Bureau of Statistics
LITERACY	Literacy rate (Percent)	Central Bureau of Statistics
Health Variable		
HC_DOCTOR	Health center doctor (Soul)	Indonesian Health Profile
SPESIALIST_DOCTOR	Specialist doctor (Soul)	Indonesian Health Profile
SUSTER	Number of nurses (Soul)	Indonesian Health Profile
HIV	Number of new HIV cases (Soul)	Indonesian Health Profile
AIDS	Number of new AIDS cases (Soul)	Indonesian Health Profile
SANITATION	Sanitation (Percent)	Central Bureau of Statistics
HOSPITAL_BED	Number of beds in hospital by treatment class (Unit)	Indonesian Health Profile
HCR	Health center ratio per eye (Percent)	Indonesian Health Profile
HIC	Health insurance coverage (Percent)	Indonesian Health Profile
PAIN_COMPLAINT	Percentage of population with health complaints (Percent)	People's Welfare Statistics

Notation	Meaning	Source
OUTPATIENT	Percentage of population who received outpatient treatment during the last month (Percent)	People's Welfare Statistics
PDW	Households with proper drinking water facilities (Percent)	Central Bureau of Statistics
BIRTH_HW	Giving birth with the help of a health worker (Percent)	Indonesian Health Profile
OWN_TOILET	Households with own toilet facilities (Percent)	People's Welfare Statistics
EB_BABY	Percentage of infants exclusively breastfed (Percent)	Indonesian Health Profile
KB_ACTIVE	Percentage of active family planning participation (Percent)	Indonesian Health Profile

Source: Central Bureau of Statistics, Author's Calculation

The data analysis method used was the dynamic panel data or Generalized Method of Moment (GMM). Furthermore, the dynamic panel data regression method uses panel data by adding a dependent variable lag to serve as an independent/predictor in the model (Gujarati, 2004:656). It is often used to analyze the dynamic economy, which indicates that a dependent variable is not only influenced by others but is also influenced by itself, namely its past value. There are two basic reasons why the dynamic panel approach was used in this study, namely 1) it is a common estimator, which provides a framework for comparison and assessment; 2) it offers a simple alternative to other estimators, especially maximum likelihood (Arellano & Bond, 1991). The regression model used is illustrated below:

$$Y_{i,t} = \alpha + \beta Y_{i,t-1} + \gamma X_{i,t-1} + \eta_i + \varepsilon_{i,t} \quad (3)$$

Where, Y is the dependent variable, X stands for the vector of explanatory variables, α is the intercept, β , γ is the vector of predictor variable coefficients, η is the fixed effect time, ε is a component of the model, i is the number of observations (cross-section), and t is time (time series). In the model of equation (3), the variable $Y_{i,t}$ is a function of $\varepsilon_{i,t}$, while $Y_{i,t-1}$ is also a function of $\varepsilon_{i,t}$. Therefore, there is a correlation between the regressor variables $Y_{i,t-1}$ with error ($\varepsilon_{i,t}$), which led to bias and inconsistency in the pool last square (PLS) estimator. This condition causes endogeneity problems, which indicate that when the model is estimated using a fixed or random effects approach, it produces biased and inconsistent estimators (Baltagi, 2005:135). To overcome these problems, Arellano & Bond (1991) proposed GMM, which is illustrated below:

$$Y_{i,t} - Y_{i,t-1} = \beta (Y_{i,t-1} - Y_{i,t-2}) + \gamma (X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} + \varepsilon_{i,t-1}) \quad (4)$$

In equation (4), the first differencing eliminates the intercept as well as the province-specific effect (η_i). However, estimation (4) is biased and inconsistent because the dependent variable lag ($Y_{i,t-1} - Y_{i,t-2}$) and error term ($\varepsilon_{i,t} + \varepsilon_{i,t-1}$) correlate. The selected explanatory variables can also be endogenous, hence, Arellano and Bond (1991) imposed the following moment limitation, which excludes the possibility of endogeneity in the model.

$$E [Y_{i,t-n}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ for } n \geq 2; t = 3, \dots, T \quad (5)$$

$$E [X_{i,t-n}(\varepsilon_{i,t} - \varepsilon_{i,t-1})] = 0 \text{ for } n \geq 2; t = 3, \dots, T \quad (6)$$

The above moment limitation is applied under the assumption that: 1) the disturbance term is not serially correlated, 2) the regressor is weakly exogenous, which indicates that it does not correlate with the present and future values of the disturbance term, but can correlate with the past realization of the disturbance term (Guru & Yadav, 2019). Therefore, a valid instrument causes a lag in the values of the explanatory variables. The OLS estimation of equation (4) is biased and inconsistent because the dependent variable in the equation can be correlated with error. Table 2 presents a summary of the statistics of the variables used in this study.

Table 2. Summary Statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max.
Dependent Variable					
LEMale	371	7.119.313	2.663.429	64.45	76.83
LEFemale	371	6.734.919	267.352	60.64	73.22
Independent Variable					
lnHC_DOCTOR	370	595.396	0.8306436	3.806.663	7.961.719
lnSPESIALIST_DOCTOR	370	5.964.076	1.470.227	0.3715636	9.055.906
lnSUSTER	370	8.677.614	0.8062128	6.990.256	1.093.012
lnHIV	338	6.029.182	1.476.758	1.609.438	9.097.732
lnAIDS	341	4.583.652	1.468.882	0	7.654.917
OUTPATIENT	369	4.678.762	8.202.742	27.79	70.89
PAIN_COMPLAINT	369	2.867.588	5.666.075	15.2	44.95
SANITATION	369	6.315.892	1.617.676	16.12	96.96
PDW	369	6.789.954	1.525.309	22.32	99.84
OWN_TOILET	369	7.109.485	1.228.604	33.06	93.55
HCR	370	1.727.568	1.018.487	0.28	7.73
HIC	370	7.286.616	2.168.612	24.8	165.45
EB_BABY	371	5.471.364	1.880.087	12.4	90.79
lnHOSPITAL_BED	370	8.448.779	1.031.616	5.631.212	1.089.927
BIRTH_HW	370	8.009.716	1.675.608	17.79	114.42
KB_ACTIVE	367	6.838.341	1.306.666	4.8	94.52
lnPCGRDP	371	1.034.658	0.5698749	9.139.573	1.207.147
POVERTY	369	1.175.726	6.349.244	3.42	36.8
UNEMPL	369	5.530.949	2.166.411	1.4	13.74
GINI	369	0.3626477	0.0389213	0.257	0.459
LITERACY	369	9.498.065	5.475.583	64.53	99.87

Source: Central Bureau of Statistics, Author's Calculation

4. Results and Discussions

Table 3 shows that, there are three models of the GMM System where the dependent variable is the male and female life expectancy. The specification test results in the dynamic panel data regression model using the system. This was because Blundell and Bond correlated the bias and poor precision of the First Differences GMM estimator with a weak instrument characterized by the concentration of the parameters. Furthermore, the additional light stationarity constraint on the initial state process allows the use of the estimator to be extended using the lag difference y_{it} , which is an instrument for level-level equations. It can also be extended with the lag level y_{it} , which is an instrument for the equation in first differences. The results

showed that the System GMM estimator increased efficiency compared to the First Differences GMM (Baltagi, 2005:147-148).

Arellano and Bond (1991) as well as Blundell and Bond (1998) in Monte Carlo stated that the two-step estimator led to a decrease in efficiency gains, but the associated asymptotic error was downwardly biased. At this stage, the estimation was carried out in a dynamic panel data regression model using a GMM system approach with the instrument. Various diagnostic tests in line with the process were also performed. The validity of the instrument was tested with the Sargan test, while the existence of serial correlation was assessed using the Arellano Bond test on AR (1) and AR (2). This was to ensure that the estimate obtained was consistent with the null hypothesis, namely the absence of autocorrelation. The statistic of Sargan test showed that the instrument selected from the estimated models was valid because the null hypothesis was not rejected and the results were not significant. Similar results were also obtained from the Arellano-Bond test statistics, where all the estimated models had no serial correlation. This is because the statistical test on AR (1) in all models was significant, while it was not significant on AR (2).

In Appendix 1. Table 3 shows that the availability of health workers in terms of the number of doctors at the Public Health Center, as well as the number of nurses and specialists in Model 1, showed that the doctors' population had a positive and significant effect on male and female life expectancy. Model 2 shows that the number of nurses has a positive relationship, but does not have a significant effect on male LE. Meanwhile, it had a significant and positive effect on females. These results are consistent with (Rogers and Wofford, 1989; Grubaugh and Santerre, 1994). The availability of doctors and nurses across various health centers and inter-provincial hospitals in Indonesia is very important in strengthening human resources and other health programs to make the community healthier. This is because public health is very dependent on the increased numbers of doctors and nurses in hospitals (Lakshmi, 2013), as well as the availability of workers to ensure access to healthcare services. The results showed that the number of specialist doctors in models 1, 2, and 3 has a negative and significant effect on the life expectancy of males and females. This finding indicates that the availability of workers who are developed using inputs, such as the number of specialists is needed because public health is very important. Apart from this factor, it is also highly dependent on operational efficiency, implementation, maintenance of infrastructure, and the efficiency of utilizing specialist doctors in various facilities.

Health conditions, such as AIDS and HIV in models 1, 2, and 3 showed that AIDS has a negative and significant relationship with life expectancy for males and females. Meanwhile, HIV in models 1 and 3 had a negative and significant effect on male LE. In model 2, it also had a negative but not significant effect on males. Model 1 showed that HIV has a negative and significant effect on female life expectancy, while it had a negative but insignificant effect in 2 and 3. These findings indicate that AIDS and HIV have a negative impact on health conditions, which can worsen people's LE. This study is consistent with Buvé et al (2002) that the population of Sub-Saharan Africa living with a serious and life-threatening illness, such as AIDS had important implications on disease burden and it reduced life expectancy. Christopher S. von Bartheld et al., (2017) also revealed that people without HIV/AIDS have an age gap of 8 years in survival compared to others with the disease.

Health conditions, such as residents receiving outpatient treatment, giving birth assisted by health workers, and active family planning participation in models 1 and 3 showed that the percentage of the population receiving treatment has a positive and significant impact on male life expectancy, while the effect was insignificant in model 2. Meanwhile, models 1, 2 and 3 showed that it has a positive and significant effect on female LE. The percentage of the population who have complaints of illness in 1, 2 and 3 had a positive and significant effect on the LE of males and females. In models 1 and 3, the percentage of births assisted by health workers has a positive and significant effect on women's life expectancy. This finding indicates that the higher the percentage of births, the greater the effect. These results are consistent with (Maryani & Kristiana, 2018; Pratiwi & Wibowo, 2016) that the higher and better the health condition, the higher the life expectancy of males and females. Models 1 and 3 on active family planning participation have a negative and significant effect on female LE. This finding indicates that the higher the participation, the

lower the LE recorded. The results showed that an active family planning program has a role in delaying or providing a period for giving birth. Therefore, the higher the active family planning, the lower the life expectancy because its active implementation after childbirth is a strategic effort to reduce the birth rate.

Environmental health conditions, such as sanitation and ownership of private toilets in model 1 showed that sanitation has no effect, but has a positive relationship with life expectancy for males and females. In Model 2, it had a positive and significant effect on LE. Private ownership of toilet facilities in model 1 has no significant effect, but it has a positive relationship with the life expectancy of males and females. Improved access to these facilities and ownership of private toilets creates a healthier environment, which leads to improved health status and higher life expectancy. These findings are in line with (Gupta et al., 2004; Rahman et al., 2022) that health is positively affected by per capita income, urbanization, access to sanitation, water, and ownership of toilets. Lack of access to the necessary facilities can increase the spread of diseases, such as hepatitis and diarrheal diseases including cholera and a weakened immune system.

Environmental health conditions, such as access to safe and proper drinking water in Model 3 had a positive and significant effect on the life expectancy of males and females. This is because water is needed to carry out bodily functions, such as regulating temperature and transporting nutrients. Furthermore, these findings are in line with research studies carried out by (Gupta et al., 2002; Greenidge and Stanford, 2007; Rahman et al., 2022; Angelakis et al., 2021). Clean water greatly affects human health, because people living with polluted water are prone to several disease conditions. Macfarlane et al. (2000) stated that several African and Asian countries experienced dramatic increases in life expectancy during the mid-twentieth century, due to increased access to safe drinking water. Similar results were also obtained by Gulis (2000) in 156 countries.

Models 1 and 2 show that the percentage of infants who are exclusively breastfed has no effect, but has a positive relationship with male life expectancy, while it has a positive and significant association in 3. Meanwhile, it has a positive relationship along with an insignificant effect on female LE in all models. These findings indicate that the duration of breastfeeding greatly affects infant survival in Indonesia. This is in line with (Black et al., 2008; Azuine, 2015) that exclusive breastfeeding can reduce the risk of chronic diseases, such as breast cancer, diabetes, and obesity in mothers. It is also beneficial to babies by facilitating their growth and development. This is because breast milk contains several nutrients needed by infants, and has the potential to prevent 1.4 million deaths among children under the age of five in developing countries every year.

The availability of infrastructure, such as the number of beds and Public Health Centers as well as health insurance participation showed that hospital bed has a positive and significant effect on the life expectancy of males and females in model 2. Meanwhile, the ratio of the Public Health Center had a positive and significant effect on LE in all models. The level of health insurance participation has a positive and significant effect in Model 1. Similar results were also obtained by (Grubaugh and Santerre, 1994; Kristanto et al., 2019). The availability of health infrastructure, such as the number of beds and centers as well as the level of health insurance participation have a positive impact on health, which can cause an increase in life expectancy for the community. This is because the availability of these facilities is very important in increasing LE, especially for people living in developing communities, including the 34 provinces in Indonesia. Health insurance can also create opportunities to access services as well as facilitate financing for intensive medical care.

The economic status in model 2 showed that Gross Regional Domestic Product (GRDP) per capita has a positive, but insignificant relationship with female life expectancy, while it had a positive and insignificant relationship with male LE in 1. Model 3 shows that it has a significant positive relationship with male life expectancy. This indicates that the higher the GRDP per capita, the higher the LE of the community. An increase in the average income also increases the purchasing power for goods and social services that can improve nutritional health, reduce mortality, and increase LE. Meanwhile, lower GRDP has no significant effect, which indicates that it can lead to disparities in income distribution (Craigwell et al., 2007). These results are in line with (Anand and Ravallino, 1993; Gulis, 2000; Craigwell et al., 2007; Kabir, 2008) that

countries with higher levels of economic development often invest more in public health. It can also be concluded that when more money is spent by the public on health, it increases the GRDP per capita. Several studies revealed that there is a strong negative correlation between the absolute level of income measured by GDP per capita and life expectancy among poor countries (Bank Dunia, 1993). Anand and Ravallion (1993) carried out a cross-country comparison, and the results showed that there is a significant positive relationship between GNP per capita and LE. This was caused by the impact of national revenue on the incomes of the poor and public spending on health.

Models 1 and 2 show that poverty has a negative relationship with male life expectancy, but it has no significant effect. Meanwhile, models 2 and 3 showed that it had a significant effect and a negative relationship with female LE, but an insignificant effect was obtained in 1. These findings indicate that the higher the percentage of poor people in an area, the lower the life expectancy of the community. This is consistent with (Subramanian et al., 2002; Widodo et al., 2021) that poverty in the community is causally related to poor public health. This is because the consumption patterns of the poor, which do not consider the adequacy of nutritional intake can worsen health conditions.

Model 1 shows that the unemployment rate has a negative effect and an insignificant relationship with the life expectancy of males and females, while model 2 has a negative and significant association. These findings indicate that the higher the number of unemployed people, the lower the LE recorded. This is consistent with (Grözinger, 2014; Kristanto et al., 2019) that the unemployment rate affects life expectancy dominantly and has a negative relationship. This is because people who do not have a job tend to have poorer health status compared to others that are employed.

Model 2 shows that income inequality has a negative, but insignificant relationship with male life expectancy, while model 3 has a negative relationship with no effect on female LE. These findings indicate that the higher the inequality of income distribution, the lower the life expectancy. This is in line with (Lynch, 2001; De Vogli et al., 2005; Kristanto, 2019) that when the distribution is uneven between regions, it affects the LE. However, higher income inequality is not associated with lower life expectancy. The weak effect of its decrease in Indonesia is caused by several factors, such as the decrease in the amount spent on health costs. Income inequality has contributed to the low access of the community to healthcare services due to transportation costs as well as the lack of household savings in the health sector.

Models 1 and 3 show that the literacy rate has a positive and significant effect on the life expectancy of males and females. It also has a statistically significant role in explaining LE. These findings are consistent with (Veugelers et al., 2001; Gulis, 2000; Williamson and Boehmer, 1997; Gilbert et al., 2018) that well-educated people often have a lower mortality rate. Improvements in education can lead to higher life expectancy across all of Indonesia's provinces. People with poor literacy skills are more likely to be unemployed or have low incomes, and these factors are associated with lower LE. This is because limited financial resources are associated with poorer physical and mental health. Meanwhile, people with higher literacy skills are more likely to be employed and receive higher incomes, thereby increasing their LE.

Life expectancy between males and females in 34 provinces in Indonesia can be increased when attention is paid to improving health infrastructure, such as the number of doctors, nurses, hospital beds, and other health facilities. These infrastructures must also be equally accessible to all communities in urban and rural areas to increase their life expectancy. Health conditions, such as AIDS and HIV are influential factors that also need attention and appropriate policies from the government. Environmental health, such as access to proper and safe drinking water as well as sanitation can play a role in ensuring people are healthy. Furthermore, social and economic status is conventionally considered to be very influential in determining life expectancy for males and females.

5. Conclusions

Life expectancy is the primary measure of a population's health and well-being. Its level can also reflect a country's social and economic conditions as well as the quality of public health and healthcare infrastructures. The monumental improvement in life expectancy has been a major trend in developing countries since the 20th and 21st centuries. In the absence of wars, new epidemics, or substantial economic reforms, a lack of improvement or stagnation in LE often raise concerns, while its decrease leads to several worries. Therefore, this study was carried out to evaluate the government's performance in improving welfare and people's health status. This was indicated by the male and female LE, hence, they were able to facilitate the achievement of the Sustainable Development Goals (SDGs).

This study also explored the impact of health infrastructure and conditions, political conditions, environmental health, and socioeconomic status on male and female life expectancy in Indonesia using the GMM method along with the GMM system. Twenty-one variables were used as a regression to test their significance in determining the LE across the various provinces in Indonesia. The results showed that most of the variables have a significant effect and are in line with the findings of previous studies. In modeling the GMM system, the findings revealed that the availability of infrastructure, such as health facilities is an important factor to support health services in the form of treatment and prevention of disease. Furthermore, the availability of health workers can also guarantee access to services needed by the community. These efforts are expected to lead to an increase in life expectancy. Environmental conditions, such as sanitation as well as access to proper and safe drinking water play a very important role in ensuring public health. They also improve the social and economic status, such as GRDP per capita, literacy, unemployment, and poverty, thereby increasing the life expectancy of males and females in Indonesia.

This study's results have several important policy implications for the government to increase LE between provinces in Indonesia, namely: 1) the importance of investing in health infrastructure development to improve and ensure a better and comprehensive public health status; 2) the realization of government policies in the health sector must continue to be evaluated for the consequences and benefits of the sustainability of the infrastructure development acceleration program. Budget allocation to the productive sector and more effective budget implementation by prioritizing community welfare improvement and social protection must also be carried out; 3) the accessibility of infrastructure and equitable health resources must be fulfilled in realizing development in the health sector.

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7. Appendixes

Appendix 1:

Table 3. SYS-GMM Estimated Results: Life Expectancy for Male and Female

Variable	LEMale			LEFamale		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
I.LE	0.91797691*** (0.0361)	0.97577784*** (0.0094)	0.931091*** (0.0127)	0.94199498*** (0.0116)	0.94481112*** (0.0182)	0.9445668*** (0.0141)
lnHC_DOCTOR	0.08953575*** (0.0257)	-	-	0.0627787*** (0.0169)	-	-
lnSPESIALIST_DOCTOR	-0.0714248*** (0.0113)	-0.0844139*** (0.0073)	-0.08376*** (0.0068)	-0.07260979*** (0.0062)	-0.09463875*** (0.0083)	-0.07383238*** (0.0054)
lnSUSTER	-	0.00764657 (0.0066)	-	-	0.02162499** (0.0069)	-
lnHIV	-0.06691114** (0.0204)	-0.01966584 (0.0132)	-0.05694*** (0.0151)	-0.03629732* (0.0181)	-0.02761318 (0.0199)	-0.0271433 (0.0152)
lnAIDS	-0.0310918*** (0.0033)	-0.0300626*** (0.0049)	-0.02518*** (0.0038)	-0.02421209*** (0.0041)	-0.02441301*** (0.0051)	-0.01958092*** (0.0031)
OUTPATIENT	0.00315341*** (0.0005)	0.00061952 (0.0007)	0.00076926* (0.0003)	0.0046435*** (0.0007)	0.00151512* (0.0007)	0.00389387*** (0.0007)
PAIN_COMPLAINT	0.0168322*** (0.0016)	0.01837638*** (0.0013)	0.01309206*** (0.0009)	0.01796401*** (0.0022)	0.01719759*** (0.0015)	0.01450257*** (0.0013)
SANITATION	0.00006259 (0.0008)	0.00168272*** (0.0005)	-	0.00041004 (0.0004)	0.00248812*** (0.0005)	-
PDW	-	-	0.00515619*** (0.0008)	-	-	0.00449806*** (0.0011)
OWN_TOILET	0.00127991 (0.0015)	-	-	0.00360518 (0.0020)	-	-
HCR	0.01218568* (0.0059)	0.02500424*** (0.0064)	0.02604134*** (0.0057)	0.02170288* (0.0088)	0.03268064*** (0.0092)	0.03147287** (0.0106)
HIC	0.00194667***	-	-	0.00117757***	-	-

Variable	LEMale			LEFamale		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
EB_BABY	(0.0003) 0.00031993 (0.0002)	0.00029556 (0.0002)	0.00045375*** (0.0001)	(0.0003) 0.00017127 (0.0003)	0.0002241 (0.0002)	0.0003849 (0.0002)
lnHOSPITAL_BED	-	0.05201158* (0.0258)	-	-	0.08212797** (0.0271)	-
BIRTH_HW	-	-	-	0.00261969*** (0.0005)	-	0.00300623*** (0.0003)
KB_ACTIVE	-	-	-	-0.00090427** (0.0003)	-	-0.00122712** (0.0004)
lnPCGRDP	0.21869569 (0.2631)	-	0.12926393*** (0.0321)	-	0.04809756 (0.0799)	-
POVERTY	-0.00253123 (0.0083)	-	-0.00331408 (0.0057)	-0.00636982 (0.0071)	-0.01598246* (0.0070)	-0.01279066* (0.0060)
UNEMPL	-0.00414975 (0.0034)	-0.0172871*** (0.0038)	-	-0.00038638 (0.0033)	-0.00739028* (0.0036)	-
GINI	-	-0.18279247 (0.3484)	-	-	-	-0.04878762 (0.2998)
LITERACY	0.02017186** (0.0068)	-	0.01656018*** (0.0022)	0.0136931** (0.0046)	-	0.00982835** (0.0036)
_cons	1.4077115 (1.5533)	1.5835605** (0.5899)	2.3290767** (0.7388)	1.9370211* (0.7624)	2.7925297* (1.1544)	2.6767412** (0.9153)
N	308	308	308	306	308	306
Sargan test	0.9963	0.9929	0.9932	0.9962	0.9950	0.9936
Arellano-Bond test						
AR (1)	0.0034	0.0054	0.0073	0.0011	0.0064	0.0011
AR (2)	0.2499	0.8161	0.2884	0.1801	0.8361	0.6880

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Author's Calculation

Investigating Health Impact on Women Due to Domestic Cooking Fuels and Associated Social Issues in Rural Punjab

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Abstract Biomass fuel, an economical organic renewable source of energy, is still intensively used for burning purposes in the majority of areas of rural Punjab. It mainly includes agricultural crop residues and animal dung which is easily available and found in abundance. But it's the dilemma of present times, that while on one side biomass fuel is facilitating the lives of residents of rural areas by providing them with a low-cost solution to meet their energy requirements, at the same time it is posing a potential risk to the health of rural women. These women are directly exposed to the health hazards of gases being released from the burning of biomass fuel due to longer contact hours. This research was conducted with the purpose to investigate how domestic cooking fuel is affecting the health and lives of women directly or indirectly. This research work was conducted in the year 2019, in three districts of Punjab, Okara, Hafizabad and Multan, with 480 data samples collected evenly in the research area. There were two slots, based on different age groups, defined for data collection. In response to investigating different social parameters and their association with health impact, it was found that rural women between the age group of 20 to 40 (slot 1) were suffering from mental health issues at a higher rate of 64 % while those with age group above 40 (Slot 2) were found at higher risk to physical health issues with 83 % of the studied population. Similarly, rural women belonging to slot 1, exhibited 87% of the workload and domestic fuel management responsibilities. The findings of this research exhibited significant variations of health impact on women for different sources of biomass fuel.

Keywords: air pollution, agricultural crop residue, animal dung, cooking

JEL Code: D10

1. Introduction

Biomass from crop residue and animal dung has been the oldest and most reliable source of energy for household fuel utilization for a long. New technological advancements have changed the means and living standards tremendously during the last few decades. However, the impacts of

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this mega shift have not yet trickled down to the common man of rural areas of developing countries. It requires immense efforts by the government and local organizations to transfer efficient and economical technology to the grass root level in developing countries of the third world. Consequently, the residents of rural areas in such regions are still bound to rely upon conventional sources of energy to meet their daily needs. Still, animal dung, crop residues, and forest clippings are the main source of fuel being used in such peripheries for cooking purposes and other such needs. Such sources, although available with ease and in excess, have a drastic effect on the lives of people, particularly rural women, due to continuous exposure to the hazardous impact of burning such sources of fuel.

The emission of hazardous gases from these sources leads to poor health conditions for the residents who are exposed to these sources of air pollution. Rural women are the ones who are most affected by such adverse environmental and health conditions due to maximum exposure to air pollution caused by burning biomass from different sources. Furthermore, there are social aspects associated with such critical environmental and health conditions which impart adverse effects on the health of rural women. Rural women are directly engaged in the collection and management of the biomass used as a source of fuel, particularly for burning purposes for cooking. Approximately 3 billion people, worldwide, rely primarily on biomass for cooking. Rural areas of developing countries are particularly reliant on biomass for cooking and heating. Women and children in these areas are often exposed to high levels of pollutants from biomass combustion that are associated with a range of respiratory symptoms. Rumchey *et al.*, (2007) found the level of indoor air pollutants was associated with the area of kitchen windows and the length of cooking time combined with the level of fire combustion. Sukhsolahe *et al.* (2013) assessed the respiratory and other morbidities associated with the use of various types of cooking fuels in rural areas of India and studied the relationship between the duration of exposure (exposure index [EI]) and various morbidities. Akhter (2007) conducted a study in rural Peshawar (Pakistan) and found a strong association between biomass fuel use and adverse health outcomes among test groups of females. In this regard, Balmes (2019) worked out that the lack of an appropriate ventilation system with inefficient cooking and heating modes using solid fuels resulted in exposure to improper air pollution and multiple diseases among females. The combustion of organically derived solid fuel is qualitatively similar to the burning of tobacco in terms of emissions of particulate matter and gases, and the mechanisms by which solid fuel smoke causes adverse health effects in human subjects are likely similar. The greatest estimated burden in adults is cardiovascular disease, but chronic obstructive pulmonary disease and lung cancer are important causes of disability and premature death in women, who are the primary cooks and tend not to smoke tobacco in developing countries. According to Imran and Ozcatalbas (2020), the use of biomass with traditional cooking technologies causes indoor air pollution and is responsible for 3.5 million deaths globally. The education of females in the household plays an essential role in energy choices. As cooking is mainly associated with females, educated ones choose clean energy sources in Pakistan. But the decision power is in man's hands in the community (Adusah-Poku *et al.*, 2022). Women play the main role in biomass-based energy systems in developing countries. The use of traditional biomass with traditional devices was found to be having negative impacts on rural women's life. Household composition, education, income, access to electricity and LPG, and distance from the market were found to be significant factors affecting the choice of fuels for cooking. Pakistan, being a developing country, is also facing serious energy crisis issues. Various studies examined that using modern energy could shift back to traditional fuels based on preferences, finance and needs (Schunder and Bagchi-Sen, 2019). Rural areas are still dependent upon biomass to fulfilling their fuel requirements. Women are mainly responsible for managing biomass throughout the year. It not only leaves a negative impact on their health conditions, but it relates to social issues as well. This research work investigates the role of rural women in dealing with biomass fuel management and determining the impact on physical

and mental health. It was also worked out to categorize the intensity of the impact of air pollution on health with changing scenarios related to social issues. The objectives of this study were to investigate the major health issues among rural women related to air pollution due to using domestic cooking fuels and determine a correlation between such health issues with the social problems being faced by these rural women.

2. Materials & Methods

2.1. Study area

A cross-sectional study was carried out in Punjab province to evaluate the health impact of air pollution due to biomass burning and its associated social issues among rural women of Punjab, which is the most populous province of Pakistan. There are thirty-six (36) districts in Punjab province and three (03) districts, Okara, Hafizabad and Multan were selected to conduct research work with a multistage selection technique. According to the 1998 census, 57.8 % of the total population of district Multan resides in rural areas, while that of district Okara's rural population is 77.16 %. Similarly, the rural population of district Hafizabad is 73 %. This study was conducted in the year 2019 as part of my Ph.D. research work. For data collection, a questionnaire was developed about all the queries regarding the assessment of the role of rural women in biomass management and its association with other social and health issues. Different variants were explored to obtain the correlation between significant parameters related to social and health determinants for rural women in the study area of Punjab province. Respondents were classified into two slots, showing the distinction between two age groups, and associated social sectors. Pie graphs were used to demonstrate the correlation between rural women of different age groups and their corresponding responses to different social parameters like behavior towards other women, level of knowledge and education, socioeconomic factors, health care facilities and adaptability towards new technical solutions to address energy and fuel issues. It also demonstrated social constraints towards addressing health issues of different age groups.

2.2. Data collection

Given obtaining representative information about mindset and approaches to deal with issues related to health problems due to air pollution originating from hazardous sources of fuel used for cooking and social aspects linked with related health issues in rural women, a questionnaire was prepared after reviewing all the requirements. All socio-medical issues were incorporated into the questionnaire developed. The questionnaire was designed in such a manner that it covers all the relevant data collection about the nature of medical and social issues faced by the rural women in the sampling area. The questionnaire was also focusing the trends and potential towards adaptability of newly available alternatives to cumbersome and toxic domestic fossil fuels. Randomly selected villages in the three (03) selected districts were visited and dispersed respondents were interviewed to fill out the questionnaire. Over all 480 respondents were questioned to obtain firsthand knowledge about the real situation in the study area. Biomass fuels which were mainly covered in this research work constitute mainly animal dung and agricultural crop residue, particularly cotton stalks. Major rural women's health parameters which are considered to be associated with domestic biofuels, their handling, management and utilization are fatigue, anxiety, higher stress level, blood pressure issues, asthma and impaired heartbeat. These health-related parameters are covered under two distinguished

categories of physical health conditions and mental health conditions of the respondents belonging to both Slots 1 and 2 of different age groups.

3. Results and Discussion

Based on the methodology adopted, the questionnaire was developed focusing on the target questions to obtain the required information from the respondents, which belonged to the three districts of Punjab province, constituting the study area. Data collected from the questionnaire is analyzed using pie charts and has been described as follows to correlate different determinants with the health conditions of rural women. The data was segregated and characterized based on two (2) slots, which represented two significant age groups of rural women.

3.1. Determining Proportion of Women Engaged in Cooking Activity:

It was required to find out how many rural women of a certain age group are engaged in the cooking activity for a specific time duration. In this regard, four (04) time durations slots were investigated. The findings are described in Fig. 4.1, which shows a specific proportion of rural women who are spending different time durations in cooking activities for both the slots of the rural women age group under investigation. For slot 1, indicating the age group between 20 to 40 years, it can be observed that maximum time duration i.e. 6 to 8 hours on daily basis is spent cooking by 80% of rural women. It depicted the level of responsibility and burden on younger married women. While for Slot 2, with an age group of more than 40, the proportion of women engaged in cooking activities is much reduced, as only 25% of women are occupied with this activity for a maximum duration of 6 to 8 hours on daily basis. This trend is quite justified and understandable as responsibilities are laid on the young ones and newly married women to look after all such household activities.

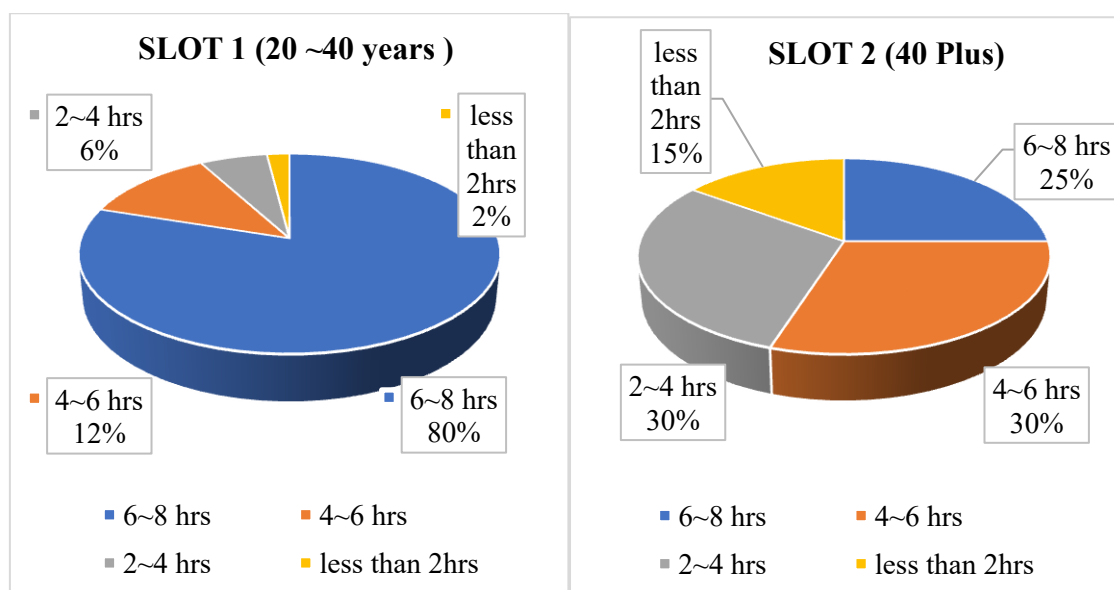


Fig. 1: Proportion of women engaged in cooking activity.
 (source: authors' calculation)

3.2. Determining the proportion of women facing health issues related to Asthma:

As there are not any intense sources of air pollution in rural areas other than indoor air pollution from cooking activity, therefore the exposure and contact time of rural women to hazardous gas emissions from domestic fuel (biomass) has become significant. Findings, as shown in Fig. 2 clearly, indicate that Slot 2 (40 plus rural women) is more affected due to Asthma i.e. about 60 % of women with an age group more than 40. Still considerable proportion i.e. 35 % of the relatively younger women group (age between 20 to 40) are facing a moderate level of asthma, which is an indication of an alarming situation regarding health issues of young women as well. It was investigated that ubiquitous environmental exposures, such as air pollution, increase the risk of asthma exacerbation in the general population through oxidative stress and inflammatory responses (Guarnieri, and Balmes, 2014) (Orellano et al., 2017).

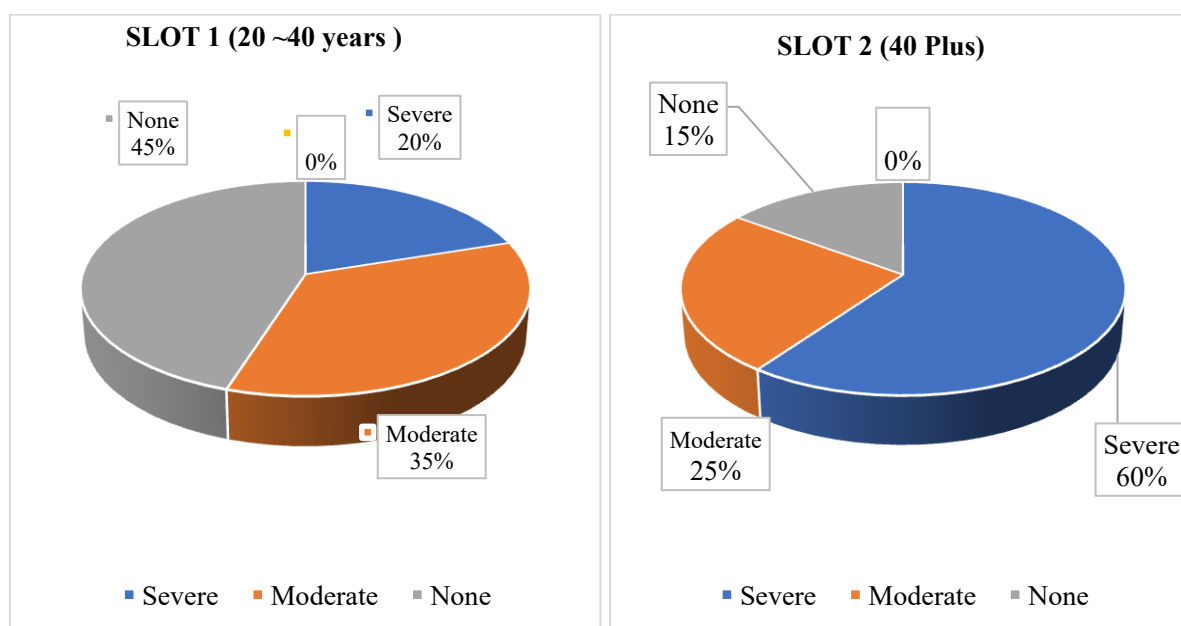


Fig. 2: Proportion of women facing health issues related to Asthma

3.3. Determining the proportion of Women facing Cardiovascular issues (Fatigue, BP, Heartbeat, pain in chest, heart attack history):

Cardiovascular issues in rural women are directly related to the level of stress and being overburdened due to excessive workload due to intense household activities. Such issues have a strong relationship with the age factor as with growing age rural women are more prone to cardiovascular issues. In one way or another other such issues are also linked with the social responsibility of the community toward younger women. Lack of cooperation is one of the factors which lead to such poor health conditions, including fatigue, blood pressure, heartbeat impairment, and heart attacks. Fig. 3 has demonstrated a varied distribution of trends of such cardiovascular issues in women of every age group. However, 55% of women with ages more than 40 are suffering from cardiovascular issues. It directly indicates the involvement of social issues associated with poor health conditions. Even the severe to moderate proportions of younger women age group are not ignorable because social issues are also definitely imparting their impact on worsening health conditions. Researchers found similar

findings through cross-sectional studies in different parts of developing countries. They investigated Significant relationship between biomass fuel use high blood pressure, pain in the chest and various heart diseases (Baumgartner *et al.*, 2011; Painschab *et al.*, 2013).

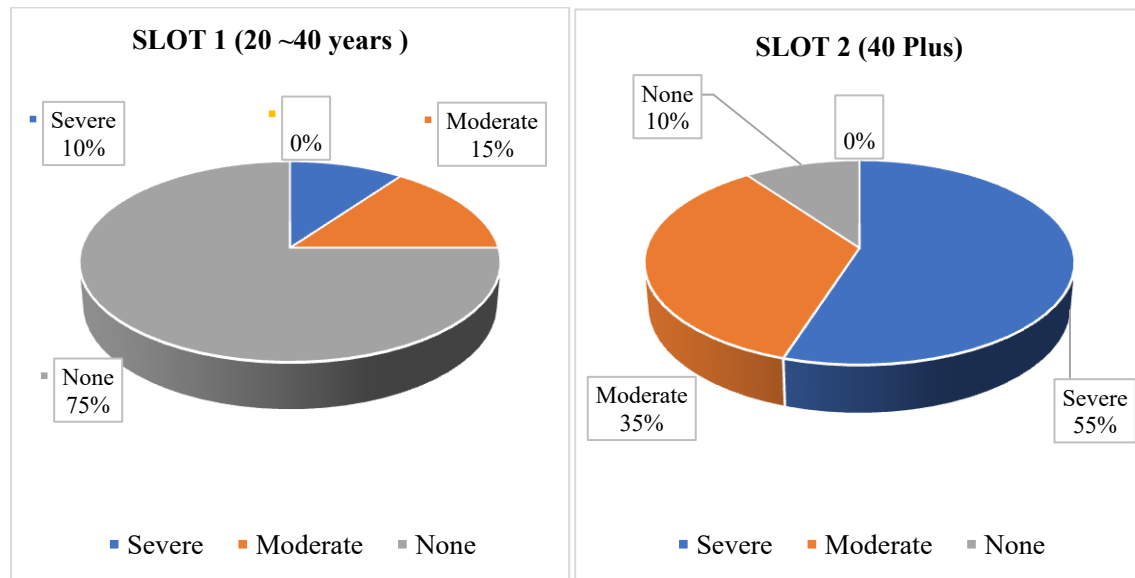


Fig. 3: Proportion of women facing cardiovascular issues.

3.4. Determining the proportion of women facing mental health issues:

The majority of mental health issues are left unaddressed and are not considered worth paying attention to in rural areas in most cases. It is associated with social issues like ignorance, the casual response from the male gender, not prioritizing such issues and connecting them with spiritualism, etc. The findings of the survey have presented a very alarming situation in this regard in Fig. 4. It can be observed that all the age groups are equally exposed to the threat of mental sickness irrespective of their age groups. Social issues are strongly associated with such adverse health conditions in young women as well as older women. Balmes (2015) studied that frequent use of biomass fuel created many mental health issues for women. It was investigated that use of biomass fuel was responsible for psychological issues, mental stress, mental illness, high blood pressure and depression. According to him all these issues always remained unreported. Another finding reported by (Shanker *et al.*, 2020), identified that women's complete dependency on traditional fuels had arduous trials on their physical and mental health.

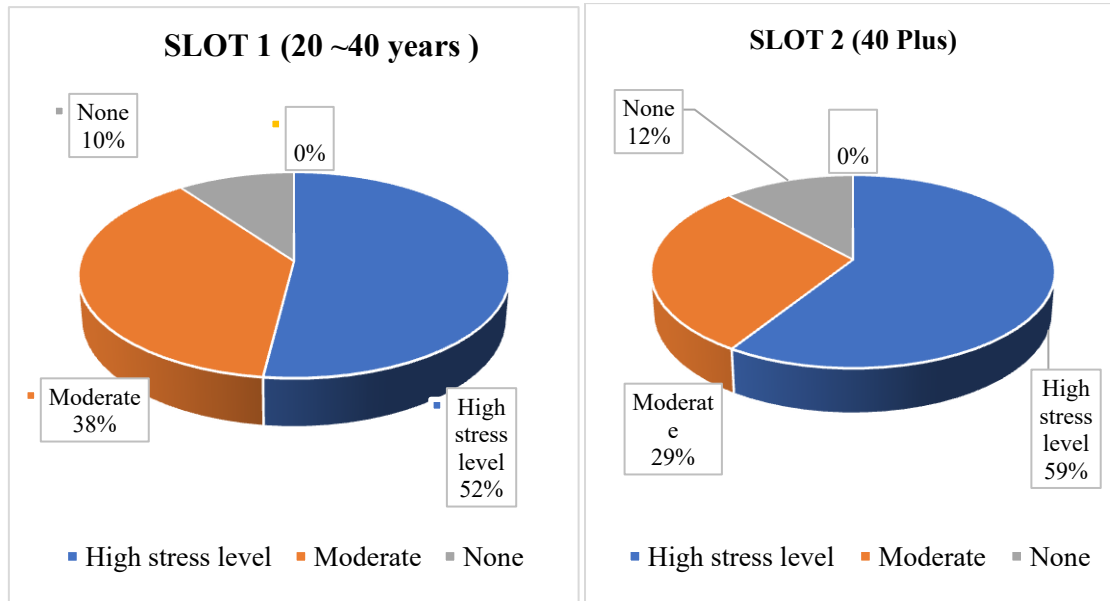


Fig. 4: Proportion of women facing mental health issues

3.5. Determining the proportion of women responsible for the management of Domestic fuel for cooking:

In rural areas of Punjab is the main responsibility of women to collect fuel for cooking and burning purposes. The only relief for elderly women is to get assistance from their kids in collecting and managing biomass from different sources. Fig. 5 has clearly shown a similar trend with dominating proportion of 87 % for younger women (Slot 1) who are mostly making the arrangements for biomass on their own. While for elderly women (Slot 2) the proportion is 62 %, relatively lower than the previous, due to the availability of assistance in the form of younger women as well as kids. Similar findings were investigated by (Hou *et al.*, 2022). They found family practices responsible for the management of domestic fuel for cooking. They also investigated the ages of females divides the duties and elderly women were more responsible for collecting fuel.

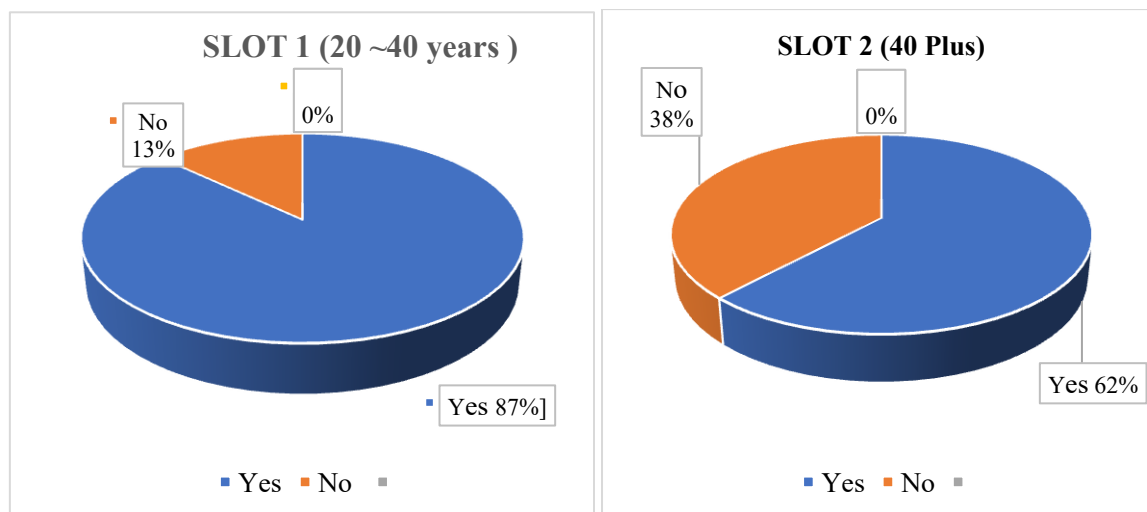


Fig. 5: Women responsible for the management of Domestic fuel.

3.6. Determining the proportion of women having awareness about physical health issues & their severity:

The findings of Fig. 6 exhibit that women of all age groups are well aware of issues related to physical health conditions. Elderly women a proportion of 83% have knowledge and understanding about the physical health problems faced by women while younger women are following this trend with a proportion of 72 %. The impact of media and information sharing through social sites is quite obvious and it has a positive role in educating rural women about health issues. Similar findings were given by Qasim *et al.*, 2013 in Sabour village. They evaluated that women were responsible for all types of kitchen activities but not aware of the adverse effect of fuel use. The majority of women residents there rely on biomass fuel use because of poverty reasons and lack of awareness. Another study by Naeher *et al.*, (2007) showed that due to a lack of education women do not know the hazards of biomass smoke. World Health Organization (2005) reported that uneducated rural women spent their lives under these threats. They are unaware, just like millions of smokers are unaware of the dangers of tobacco.

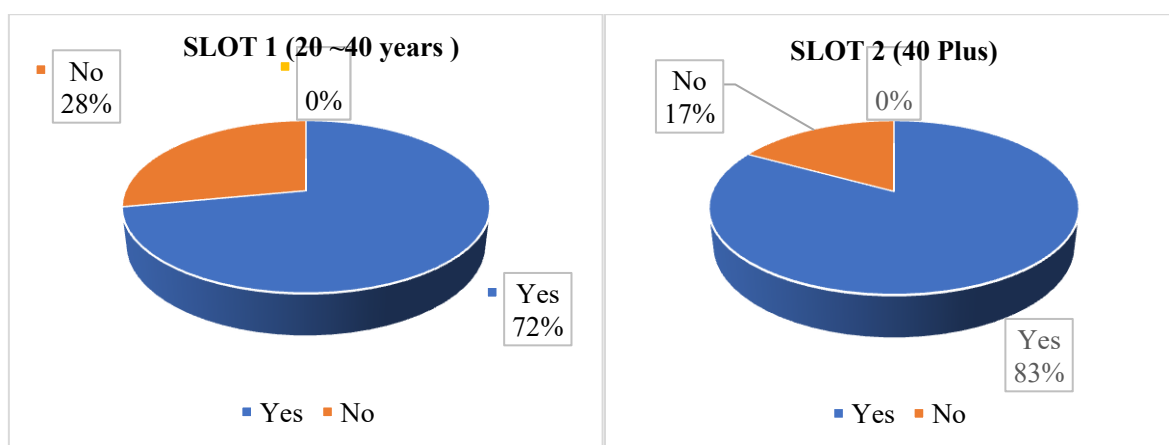


Fig. 6: Women having awareness about physical health and its severity.

3.7. Determining the proportion of women having awareness about mental health issues & their severity:

It can be observed from the findings as demonstrated in Fig. 7 that about 64% of younger women and 55% of older women are aware of mental sickness. It is only due to a lack of seriousness about the mental health of rural women. This issue has never been given importance rather it has been exploited socially to great extent. Asibley *et al.*, (2021) investigated that lack of awareness and lack of choices provided to women also appear as part of cultural limitations. And these limitations further lead to their mental health. Yadav *et al.*, (2019) examined that majority of rural women were following old methods of fuel during house chores because of a lack of awareness and they were facing severity in mental stress and depression.

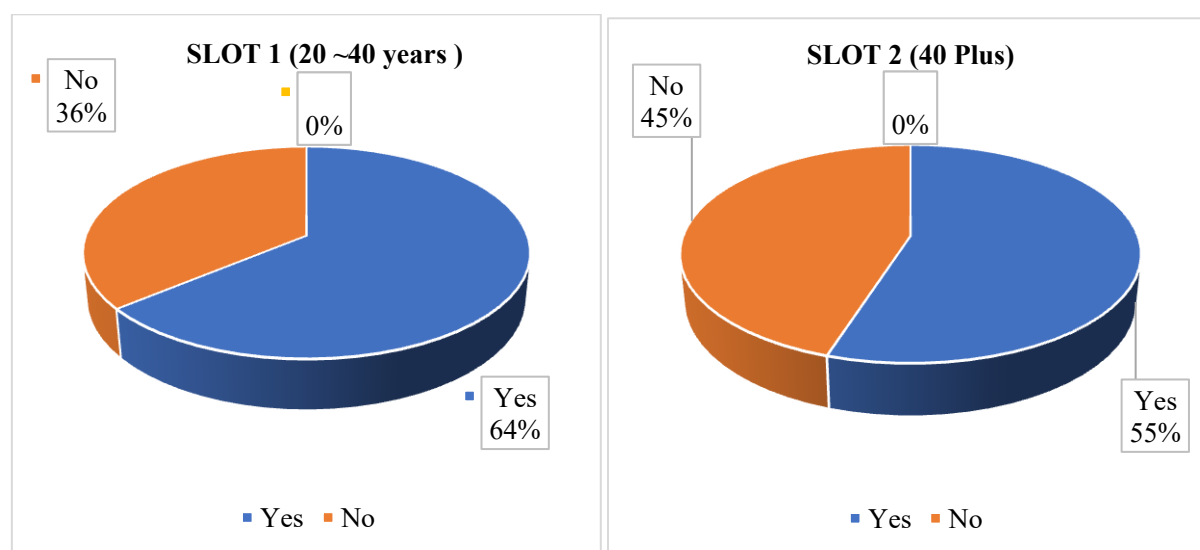


Fig. 7: Women having awareness about mental health and its severity.

3.8. Determining the proportion of women with easy access to medical facilities/aid:

There are two aspects covered regarding access to the medical facility. Firstly, it is about the provision of health facilities at the doorstep i.e. existence of satisfactory medical units within the villages or peripheries. Secondly, the ease by which patients can be carried to a better and well-equipped medical facility center, particularly in case of emergency regarding heart attacks, pregnancy, or trauma. The findings as described in Fig. 8 indicates that 45% of young women do not have access to any medical facility at the time of emergency. The response to elder women is much more satisfactory and 85% of rural women have confirmed access to medical facilities. This better response for elderly women is justified by the natural attention and affiliation of men towards his / her mother or elderly women being more respectable and honored by every person, whether it's a doctor or any other service provider.

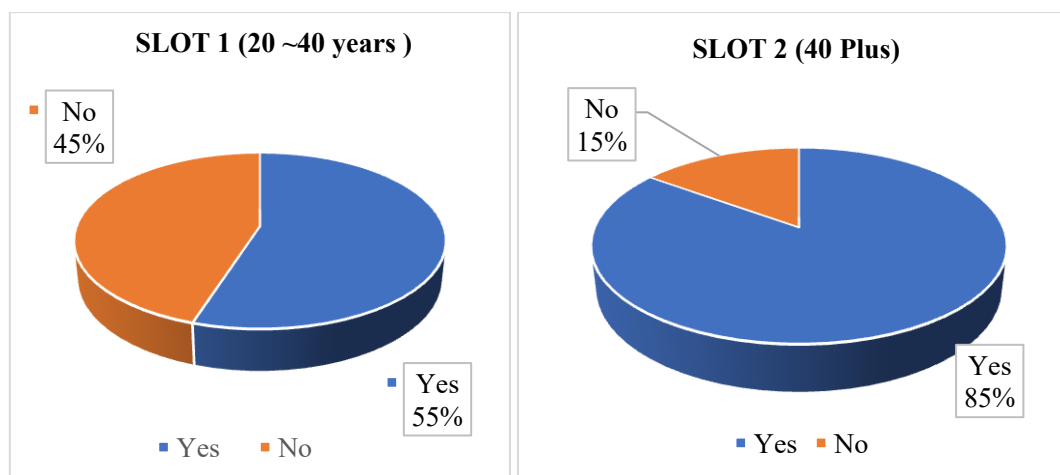


Fig. 8: Accessibility of women to medical facilities or aid.

3.9. Determining the proportion of women having assistance from other family members or males:

There are so many social factors involved in responding to providing help to rural women of different age groups. Fig. 9 indicates that only 22% of younger women of age group 20 to 40 are getting help from other family members or males while older women with ages more than 40 responded 58% with the availability of help and assistance from other family members. Again the local cultural values, lack of education and dominant personality syndrome are the main reasons for not helping the younger women with daily routine tasks. However, in the case of elderly women, the response is just opposite to the previous, based on factors including, respect for elderly women, particularly mothers.

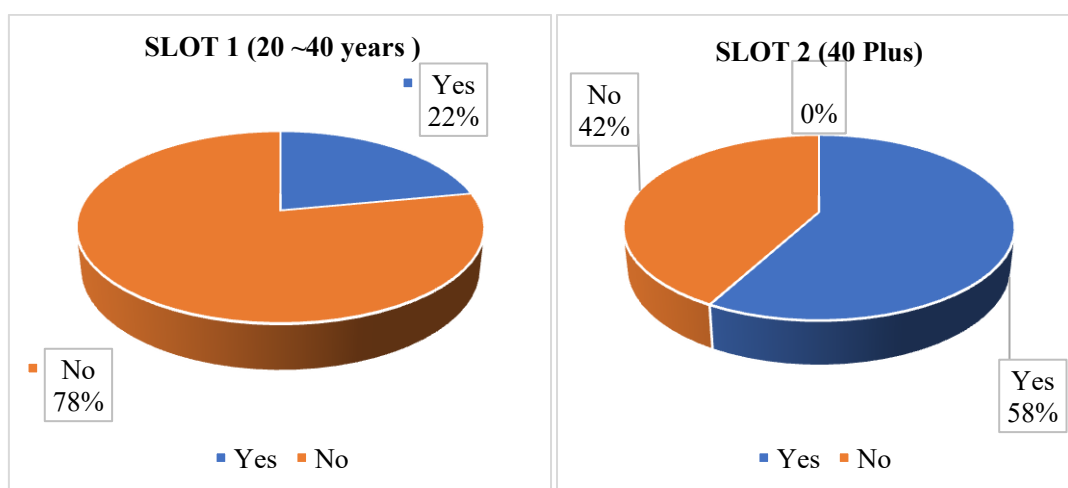


Fig. 9: Women having assistance from other family members or males.

3.10. Determining the proportion of women having adaptable approaches towards new means of cooking and new energy resources:

Under the influence of media campaigns, younger women in particular are more aware of new technologies related to cooking, which include the latest electrical appliances and others. Younger women being more at ease with new modes of communication, Facebook and the internet, are more well-informed about these technological developments. Therefore Fig. 10 depicts that younger women are more in favor of adopting the latest technologies even in rural areas. While elderly women with 48% proportion, are also mostly in favor of adopting easier modes of living and improving their quality of life. Imran *et al.*, (2019) investigated that people find it hard to follow the new energy sources in different rural areas because they find them complex. This is why Ntiyakunze-Stanslaus (2021) suggested with new forms of energy being provided, the need for educational awareness becomes necessary.

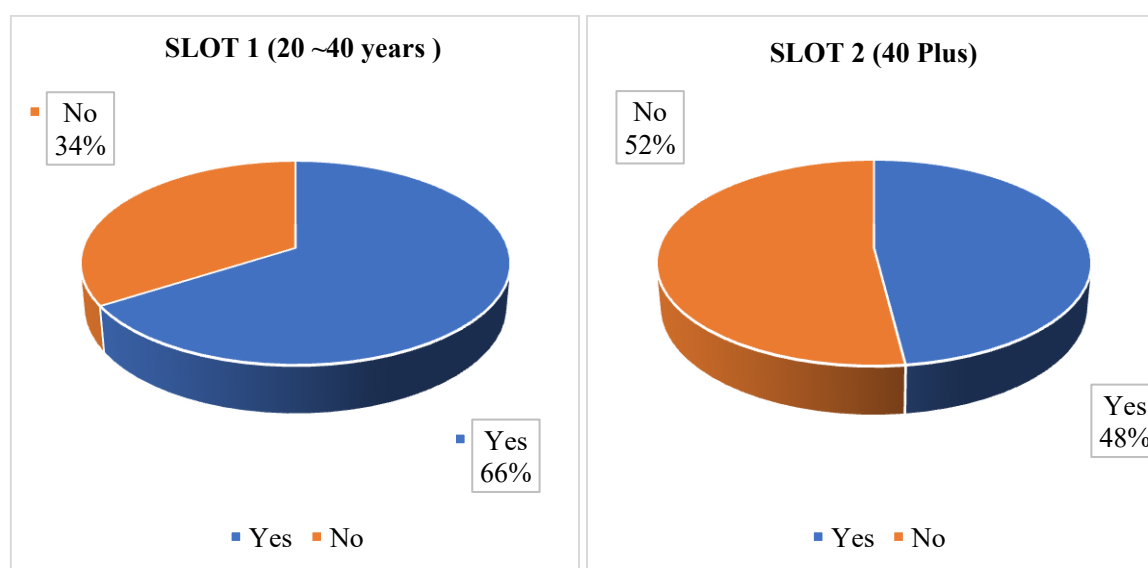


Fig. 10: Adoptability of women towards new technology

Based on the findings and their explanation, a strong correlation between physical health issues originating from domestic fuel for cooking and most of the social issues being faced by rural women has been established.

4. Conclusion

There are severe issues related to awareness of the intensity of health issues of adult women. Despite having awareness of the new means of cooking with cleaner fuels, adult women are deprived of providing such facilities due to economic reasons or conservative approaches still in practice. Adult women are facing severe problems related to mental stress and physical health due to the overburden of other responsibilities. Adult women in the age group 20 to 40 are at a higher level of risk for mental health problems, with 64% exposure, due to improper means of cooking and extra workload and responsibilities. However other influencing social factors, which could be affecting the mental health of rural women of this age group were not explored in this research. While on the other side, rural women belonging to the age group 40 and above (Slot 2) were having a higher rate of risk of physical health problems, particularly related to asthma and other associated illness with 83% exposure rate. Malnutrition can one of the reasons for poor health conditions of adult women, particularly during

pregnancy duration. Challenges being faced by rural women in approaching proper healthcare units or facilities is one of the major socio-medical problems.

5. Acknowledgment

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B2C E-Commerce Adoption among Elders in Greece

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Abstract. *The use of e-commerce has a lot of potential to make the lives of older people better. It could give them power, the ability to manage and control their finances, lower care costs, and make them less reliant on others, so they could live on their own. Using a questionnaire survey, this study looks at whether individual characteristics of older Greek people could affect their adoption of e-commerce. Eight variables that could be linked to adoption: gender, age, marital status, residential status, level of education, experience with information technology, employment status, and income were examined. The results show that age, gender, residential status, education level, employment status, and income all play a big role in how older people shop online. The results of this study help service providers and the government understand how older people's individual characteristics affect online shopping. As a result, this knowledge would help them find and use the right strategies to improve online shopping.*

Keywords: E-commerce adoption, older people, Greece, individual characteristics

JEL Codes: JEL Codes: O18, O33, R2

1. Introduction

The retail sector has changed dramatically since the internet's introduction. In 2020, nearly two billion individuals have bought products or services online. In the year of the pandemic, global retail e-commerce sales grew by more than 25%, with Argentina reporting the largest percentage rise (Statista, 2021).

Consumers nowadays have access to global marketplaces with more product availability from a range of sellers through e-commerce. The Internet has created a low-cost channel for consumers to purchase goods and services, as well as lower transaction costs (Willis, 2004). E-commerce can also save money for e-businesses by better managing their supply chains (Willis, 2004; Chong et al. 2011).

According to Brynjolfsson et al. (2000), e-commerce prices are 9-16 percent lower than brick-and-mortar prices. E-commerce also boosts retail competition as well as surplus value and customers can make purchases from any location and at any time. Other benefits for the buyers are "enhanced communication features" as many communication technologies can be used and "purchase flexibility" as they believe they can utilize e-commerce services from anywhere at any time. (Anckar et. al 2003).

Economic growth is accelerated by increases in national income and the amount of output and services produced. E-commerce spending was shown to have a beneficial influence on per capita GDP (Cardona et. al, 2015; Anvari and Norouzi, 2016).

Despite the negative consequences it may have on brick-and-mortar establishments, e-commerce has a net beneficial impact on society. According to Zatonatska (2018), the development of Internet sales per capita in Ukraine and Poland helps to lower unemployment rates. It also connects people, especially with the help of social networks (Linda, 2010).

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More than 1.8 billion individuals throughout the globe currently buy their items online. According to Internet World Statistics (2020), there are over 3 billion Internet users worldwide. This development suggests that internet shopping has a lot of potential and advantages for people and companies. According to Eurostat (2020), Greece is among the countries that have one of the least internet purchases by individuals (54%), far below the Euro area average which is 68%. We can see that, except for the ages 25-34, internet purchases are continuously below Europe's average for Greek individuals (Figure 1). As age progresses the gap increases also. The biggest distance from the rest of Europe is for the ages 65 to 74.

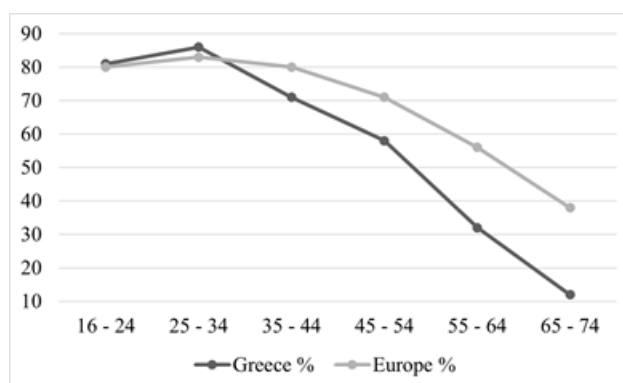


Fig. 1: Internet purchases by age group in Europe for 2021
 (Source: *research - Atanasova I. and Gerakis V. (2022)*)

Greece is one of the European nations with the highest proportion of senior citizens (Eurostat, 2020c). According to Eurostat (2021), Europe-27 has a 32% population aged 65 years or over to a population 15 to 64 years old. Greece's corresponding percentage is 35.1% for 2020, and the projection for 2050 is 52% for EU-27 and 62.6% for Greece.

2. E-commerce during the recession period

Greece's fiscal and macroeconomic climate deteriorated precipitously in 2008 and 2009. In 2010, an EU-IMF-financed economic adjustment program was launched to address imbalances. Between 2008 and 2016, Greece lost over a quarter of its GDP in constant terms. Meanwhile, there was a significant brain drain and widespread underinvestment, both of which had far-reaching economic and social effects (Stournaras 2019).

The crisis had the greatest effect on earnings (Lyberaki 2018). The median income of those aged 50+ decreased significantly across all age categories. However, the effect was far from even: those of the working age (50-64) had the greatest reduction (by 13 percent), followed by older categories (decline by 7 percent). These effects are shown in private disposable income per capita (which has decreased by 23 percent), while the age gap is also reflected in EU-SILC statistics. As Lyberaki (2018) discusses, working individuals lost on average more than retirees.

Ebbinghaus (2021) showed that the economic position of elderly adults varies significantly throughout Europe (Figure 2). Southern Europe's Bismarckian systems lessen poverty for older people in comparison to the working-age population. As shown in the graph, Greece's old population has a substantially lower risk of poverty than the majority of other countries.

Numerous studies indicate that elderly adults are quite prosperous and seem to be eager to spend. In the United Kingdom, an analysis of household spending by age finds that those aged 50 to 64 spend more per head on leisure and culture, including autos, movie and theatre tickets, and international trips than any other

age group (Sunbury and Simcock, 2009). There has been much evidence in the literature that older consumers tend to have the same buying behaviour as the youngest ones, as they are an increasingly important market for a variety of goods and services (Uncles and Lee, 2006; Sunbury and Simcock, 2009).

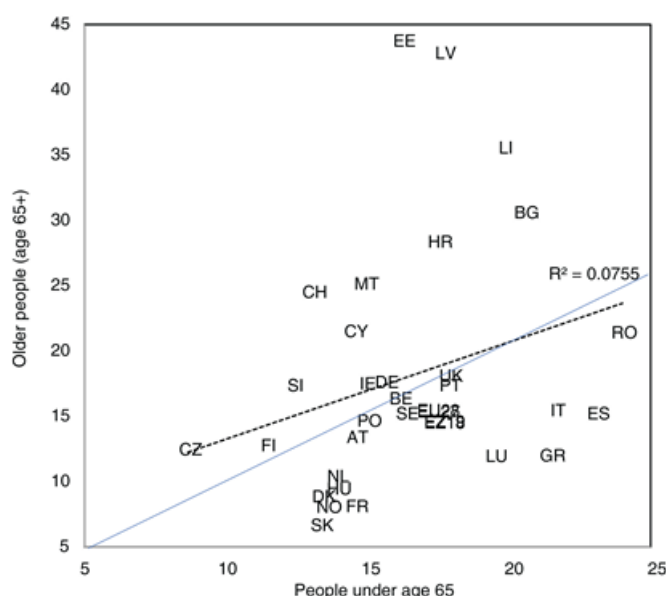


Fig. 2: At-risk-of-poverty rate by age group.

(Source: *At-risk-of-poverty rate (ilc_pnp1)* in EU-SILC (2017/18) as cited in Ebbinghaus (2021))

For more than a decade, Greece has been exposed to tremendous austerity. E-commerce has been shown to be an effective technique for minimizing the effects of a crisis in research. Many Greek seniors have yet to adopt business-to-consumer e-commerce; this study will seek to rationalize their decision and provide insights that will contribute to enhancing Greece's social welfare and economy.

3. Literature review and hypotheses development

This study is the first in Greece to provide thorough information on the uptake of Internet commerce among Greek older adults to electronic commerce stakeholders. It is vital to explore the challenges and opportunities related to Internet commerce from a scientific approach. Only then, based on a complete grasp of future consumer behavior, can business plans be designed and implemented. The goal of this study is to see whether disparities in e-commerce adoption among older Greeks can be linked to individual characteristics.

Men prefer to purchase online more than women, according to Lian and Yen (2014), because they view compatibility, complexity, and relative advantage to be more beneficial. Women prioritise satisfaction and comfort first, followed by function and quality, according to Azevedo et al. (2008), justifying the existence of gender differences in consumer buying behavior. According to Jen-Hung and Yi-Chun (2010), men are more favorable about online buying than women, citing utilitarian reasons (like convenience, absence of

social interaction, and cost savings), while females emphasize hedonistic reasons (like adventure, social interaction, fashion, and value). According to Hashim et al. (2009), men are more likely than women to shop online due to their commitment to their jobs and studies. Female shoppers are more leisure shoppers who prefer to do their shopping the old-fashioned way.

Hypothesis One: Gender is a substantial positive indicator of elderly people's e-commerce adoption.

According to Ariansyah et al. (2021), age appears to have a negative relationship with e-commerce adoption. Older people may not fully comprehend the benefits of the Internet. Furthermore, younger people prefer to shop online. According to Lee (2010), both Internet use and e-commerce adoption are affected by age. McCloskey (2006) and McCloskey and Leppel (2010) found that people over the age of 70 were less likely to have shopped online and were more negative about how easy it is to get information than younger people.

Hypothesis Two: Age is a substantial negative indicator of elderly people's e-commerce adoption.

Married people are more likely to value time and have greater spare money, increasing their willingness to use e-commerce. Married respondents and ethnic minorities were not found to have reduced Internet access, according to Zhu and Chen (2013). When compared to unmarried persons, Liebermann and Stashevsky (2002) found that married people perceive much larger hazards over the Internet, such as Internet credit card theft and disclosing personal information. According to Hashim et al. (2009), respondents who are divorced or widowed have a greater rate of engaging in Internet commerce than those who are single, while those who are married have the lowest rate.

Hypothesis Three: Marital status is a substantial positive indicator of elderly people's e-commerce adoption.

People who live with others are more likely to use computers and adopt e-commerce because they can educate each other and ask each other for help if they get stuck on a job. Taylor et al. (2003) discovered that those who had children at home were identified to be associated with Internet use from home. Living alone or with someone stood out as a significant factor among the older adult Internet user, according to Berner et al. (2015). Being exposed to the Internet, and being able to ask for help if something goes wrong are all likely relevant factors.

Hypothesis Four: Residential status is a substantial positive indicator of elderly people's e-commerce adoption.

Naseri and Elliott (2011) established an adoption model that showed that education, among five other demographic factors, is a good predictor of online shopping. Burke (2002) found that older buyers with more education were more comfortable making purchases online than those with no or limited education. Better education, according to Dani (2017), makes Internet purchases less tempting.

Hypothesis Five: Education level is a substantial positive indicator of elderly people's e-commerce adoption.

According to Chang and Chen (2008), Internet experience is a key moderating component in understanding clients' e-commerce behavior. When clients have a lot of Internet expertise, the quality of the customer interface has a beneficial impact on switching costs, according to their research. The relative relevance of online information declines with increased consumer Internet experience. For customers with a lot of Internet experience, offline information becomes more relevant. Cheema and Papatla (2010) found that consumers' faith in information from online search engines reduces as the Internet experience increases. The findings of Hernández et al. (2010) indicated that the effect of the Internet experience on e-commerce perceptions changes with the purchase experience, but the influence of purchasing experience remains

constant for all consumers. Because experienced e-customers are well-versed in the medium used, engagement with a difficult website is unlikely to lead them to leave the purchase process. Corbitt et al. (2003) found that older people who have more experience using the internet are more likely to buy things from the Internet. This means that people who haven't used the internet much are less likely to use it.

Hypothesis Six: Information technology experience is a substantial positive indicator of elderly people's e-commerce adoption.

A person's employment position is a crucial component in explaining e-commerce adoption. Workers are more likely than jobless people to make an online purchase, according to Pérez-Hernández and Sánchez-Mangas (2011). Kaye et al. (2009) discovered that employment had a considerable impact on computer and internet usage among people with disabilities. Job and occupational positions significantly increase people's likelihood of using the Internet as they get older. Wilson et al. (2003) found that individuals who were working full-time were more likely to have computer and internet access at home.

Hypothesis Seven: Employment status is a substantial positive indicator of elderly people's e-commerce adoption.

The study by Siyal et al. (2006) highlights the significance of income level as a key determinant in the adoption of e-commerce, showcasing how affluent individuals in Singapore are more inclined to embrace innovative ideas. This finding underscores the role of financial capacity in driving e-commerce readiness. Additionally, the research conducted by Clarke et al. (2015) sheds light on the impact of various demographic factors on e-commerce consumption. Age, wealth, location (rural vs urban), and proximity to traditional stores emerge as crucial factors influencing e-commerce usage, emphasizing the importance of considering these demographic discriminators when analyzing e-commerce expansion in the grocery retail sector.

Hypothesis Eight: Income is a substantial positive indicator of elderly people's e-commerce adoption.

4. Research design

The impact of older Greek consumers' attitudes on online shopping behavior is the topic of this study. In particular, the impact of individual characteristics on consumers' online buying behavior is investigated in connection to gender, age, residential status, IT experience, marital status, income, education level, and employment status. This study uses a self-administered structured questionnaire survey to investigate these topics.

A study was conducted to get consumer opinion to measure e-commerce engagement. Individuals who are both existing and potential e-commerce users are referred to as consumers. Participants in this research were Greek citizens, above 50 years old, and lived in a big city in Greece. Based on the findings of earlier studies and a pilot trial, a structured questionnaire was created. This method was chosen for its cost-effectiveness and simplicity of administration. Furthermore, it ensures that responders remain anonymous, allowing them to react honestly without fear of penalties (Lipovetsky and Conklin, 2004). Because the participants were chosen at random, it is expected that the results will reflect reality (Bagchi, 2005). A total of 250 questionnaires were issued, and after four weeks, 153 forms were received, of which 116 were kept for final analysis because the remaining forms were not entirely filled.

5. Results

Demographic Profile

The demographic profile of the responders is shown in Table 1. According to the findings, males account for 47.4 percent of the 116 respondents, while females account for 52.6 percent. The age group 60 to 69 had the most respondents (34.5 percent), followed by 50 to 59 (29.3 percent). One-fourth of the respondents are between the ages of 70 and 79 (22.4 percent), with the remaining 13.8 percent being over the age of 80.

The majority of respondents (69 percent) are married, followed by widowed (20.7 percent), separated or divorced (5.2 percent), and single (5.2 percent). Additionally, 50.9 percent of the respondents are living with a spouse/partner, 28.4 percent are living with relatives, 19.0 percent are living alone, and 1.7 percent are living in a nursing facility.

Table 1: Demographic profile of the respondents

Gender distribution			Marital status distribution		
Gender	N	Percent	Marital status	N	Percent
Male	55	47.4	Divorced	6	5.2
Female	61	52.6	Single	6	5.2
Total	116	100.0	Married	80	69.0
			Widowed	24	20.7
			Total	116	100.0
Age distribution			Monthly income distribution		
Age group	N	Percent	Monthly income	N	Percent
50-59	34	29.3	Less than 500€	20	17.2
60-69	40	34.5	501€ to 800€	29	25.0
70-79	26	22.4	801€ to 1200€	40	34.5
80-89	15	12.9	1201€ to 1800€	25	21.6
90-99	1	0.9	Above 1801€	2	1.7
Total	116	100.0	Total	116	100.0
Residential status distribution			Education level distribution		
Residential status	N	Percent	Education level	N	Percent
Living with family	33	28.4	Primary school	19	16.4
Living with spouse	59	50.9	Secondary school	42	36.2
Living alone	22	19.0	Bachelor's degree	46	39.7
Living in residential home	2	1.7	Above bachelor's degree	9	7.8
Total	116	100.0	Total	116	100.0
User experience with technology			Job status distribution		
User experience	N	Percent	Job status	N	Percent
Too bad	15	12.9	Unemployed	4	3.4
Bad	19	16.4	Self-employed	4	3.4
Neither good nor bad	41	35.3	Employed	35	30.2
Good	33	28.4	Household	5	4.3
Too good	8	6.9	Retired	68	58.6
Total	116	100.0	Total	116	100.0

In terms of academic achievement, the majority of respondents (39.7 percent) have a bachelor's degree, followed by respondents with secondary school education (36.2 percent), 16.4 percent having primary school education, and only 7.8 percent having postgraduate education. In terms of information technology experience, the results suggest that 35.3 percent of respondents have moderate IT experience, while 33 out of 116 respondents (or 28.4 percent) have good IT experience. One-third of the respondents (29.3 percent) say that they have a bad or too bad IT experience, while 6.9 percent say they have a too good IT experience.

More than half of the respondents (58.6 percent) are retired, while approximately a third (30.2 percent) were working at the time of the survey. They worked in household activities at 4.3 percent of them, were unemployed at 3.4 percent, and were self-employed at 3.4 percent of cases. According to the respondents' monthly income statistics, 34.5 percent make between 801€ and 1200€ per month, while 25 percent earn between 501€ and 800€ per month, 21.6 percent earn between 1201€ and 1800€ per month, 17.2 percent earn less than 500€, and 1.7 percent earn more than 1200€ per month.

Correlation Matrix

The amount of multicollinearity issues in the Pearson correlation matrix for the extent of e-commerce adoption was investigated (Table 2). The aggregated measure of employment and age had the strongest squared correlation among the independent variables of 0.40. None of the squared correlations were close to 0.80, indicating that there was no evidence of significant multicollinearity among the research variables (Hair et al. 1995).

Table 2: Correlation matrix for the extent of e-commerce adoption

	gender	age	marital	residential	education	IT_experience	employment	income	adoption_level
gender	1.000								
age	-0.140	1.000							
marital	0.224*	0.348**	1.000						
residential	-0.102	0.549**	0.093	1.000					
education	-0.140	-0.561**	-0.206*	-0.419**	1.000				
IT_experience	-0.062	-0.109	-0.079	-0.036	0.109	1.000			
employment	-0.013	0.636**	0.235*	0.426**	-0.348**	-0.234*	1.000		
income	0.181	0.311**	0.089	0.118	-0.426**	0.027	0.142	1.000	
adoption_level	0.007	0.316**	0.042	0.273**	-0.196*	0.003	0.320**	0.076	1.000

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

Hypotheses Testing

Discriminant analysis was used to examine the individual hypotheses about the decision to adopt e-commerce. Discriminant analysis is a method for examining the differences between two groups in terms of two or more independent variables at the same time. When the dependent variable is categorical (e.g. adopters or nonadopters) and the independent variables are interval data, it is the proper statistical procedure (Hair et al. 1995).

Table 3 displays the findings of the discriminant analysis. The whole model was significant, according to Wilks' lambda of 0.697 ($\chi^2 = 39.68$, $df = 8$, $P = 0.0000$). The degree of prediction accuracy evaluated by the

percentages of instances classified properly is another metric of the discriminant function's efficacy. The discriminant function accurately identified 80.02 percent of the individuals in the sample. Adopters and nonadopters had individual correct classification rates of 64 percent and 65.9 percent, respectively.

The independent variables that are significant discriminators between the two groups are identified by the probability for the F-statistics. The discriminant loadings or structural correlations illustrate the relationship between a variable and the discriminant function. The discriminant loadings represent the variance that the independent variables share with the discriminant function and can be used to evaluate each independent variable's relative contribution to the discriminant function. According to Hair et al. (1995), any variable with discriminant loadings larger than or equal to 0.30 is generally considered important.

Hypotheses 2, 4, 5, 7, and 8 were all supported by the results. Age, residence status, education level, employment status, and income level all had a major impact on e-commerce adoption. The decision to use e-commerce was unaffected by gender, marital status, or technological experience (Table 3).

Table 3: Discriminant analysis for the extent of e-commerce adoption

Variables	F-value	Significance	Discriminant loadings
age	30.667	0.000	0.787
employment	16.571	0.000	0.578
education	15.871	0.000	-0.566
residential	9.884	0.002	0.446
income	5.452	0.021	0.332
gender	2.194	0.141	0.210
marital	0.232	0.631	0.068
IT_experience	0.001	0.976	0.004

Age, employment, education, and residential status show significant relationships with the discriminant function, while income, gender, marital status, and IT experience have weaker associations.

6. Discussion and findings

The purpose of this study was to learn more about e-commerce adoption among the elderly by identifying characteristics that influence e-commerce adoption and usage in Greece. It proposed and scientifically evaluated an e-commerce adoption model. The results show that the model was significant, with the discriminant function correctly identifying 80.02 percent of the sample members.

Age is the most important factor in determining the level of e-commerce adoption. This is hardly surprising, given that elderly individuals frequently struggle with technology. This is in line with past adoption research findings (e.g. Ariansyah et al.). This is expected because it is rare for an older person to have used technology and the internet during his productive years, so making online purchases is something he does not completely comprehend or require.

According to the findings of the study, employment status has a considerable beneficial impact on e-commerce adoption. Previous research has also found that people's job and occupational status considerably boost their likelihood of using the Internet for online purchases (e.g. Wilson et al., 2003). This could mean that as older people retire, their willingness to use the internet drops dramatically.

The use of e-commerce by senior adults was found to be linked to their educational level. This data supports prior research claims (e.g. Naseri and Elliott, 2011) that education is one of several characteristics that influence online shopping. This could indicate that highly educated people work in environments where computers are used, boosting their application knowledge, skill levels, and computer-skills support networks. Our findings contradict Dany's assertion (2017) that more education makes internet purchases less appealing.

Taylor et al. (2003) and Berner et al. (2015) have identified residence status as an individual factor that impacts e-commerce adoption. The outcomes of this study support the above hypothesis, indicating that older individuals who live with others are more likely to use computers and adopt e-commerce because they can educate one another and seek help if they get stuck on a work.

As predicted by previous research, income level was found to be a determinant element of e-commerce adoption among the elderly (Siyal et al., 2006; Clarke et al., 2015). As consumers' salaries rise, so will their consumption, until they reach a saturation point.

Finally, the remaining individual characteristics of gender, marital status, and information technology experience have no significant direct effect on older people's decision to use e-commerce, contradicting previous research.

Table 3 demonstrates that gender has no significant influence on the level of e-commerce adoption by older persons, which contradicts the reasons made in the hypothesis development. For example, according to Lian and Yen (2014), men prefer to shop online more than women because they perceive compatibility, complexity, and relative advantage to be more favorable.

In terms of marital status, the findings demonstrate that there is no correlation between being single and e-commerce adoption. The findings contradict prior studies (e.g. Hashim et al., 2009) which revealed that respondents who are divorced or widowed have a greater rate of engaging in electronic commerce, followed by single respondents, and finally married respondents.

The data show that persons with prior IT experience are less likely to adopt e-commerce. This study does not appear to be compatible with Corbitt et al. (2003), who showed that elderly people are more likely to purchase from the Internet if they have more expertise with it, while inexperienced persons are less likely to do so.

Implications

The study added to the previous literature in various ways while also emphasizing the importance of understanding the present condition of e-commerce adoption among the elderly. This study was the first to examine the individual characteristics that determine the degree of e-commerce adoption, as well as to evaluate the application of numerous hypotheses among older individuals. Furthermore, studies that looked at the determinants of e-commerce adoption usually tended to focus on one, two, or three at most four distinct variables, rather than the eight revealed in this study. Because it tested hypotheses that had been tested using younger people with older people, our understanding of individual traits that influence e-commerce adoption was strengthened, resulting in the contribution of new insights.

For more than a decade, Greece has been forced to unprecedented austerity, with disastrous implications for the economy and everyday lives of Greek inhabitants. Studies have shown that e-commerce is a useful strategy for minimizing the effects of a crisis and boosting the economy. Given that many Greek seniors have yet to adopt B2C e-commerce, this study uncovered five factors that influence older consumers' online activity and could help improve Greece's social welfare and economy. Allowing older people to use e-commerce has the potential to improve their quality of life by empowering them, retaining their independence, and reducing their reliance on others.

7. Limitations and Future Research

There are some limitations to this study that can be explored in future research. First, while the current study was limited to Larisa (the 5th largest city in Greece), comparative research might be conducted in other regions of the country, particularly in rural areas, where significant cultural differences may exist.

Another study limitation was snowball sampling. While a problem of selection bias may restrict the sample's validity, this sampling strategy provided a way to reach older people among the most vulnerable and impenetrable social groups, as older people are among the most difficult persons to interview. The problem of selection bias, on the other hand, can be somewhat addressed by producing large samples and duplicating results to enhance any generalizations.

More research on older people's adoption of e-commerce, with an emphasis on diverse facets of e-commerce, might be conducted. E-mobile, e-banking and pharmacy websites, are just a few examples. There is very little study on older people's uptake of e-commerce. Future study is needed on the following topics: the effects of age-related impairments on accessibility, e-commerce adoption among older persons of various demographics, and the hurdles to e-commerce adoption among older people.

8. Disclosure of interest

The authors of this publication declare there is no conflict of interest.

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Life Satisfaction of Working Women in Malaysia, A Southeast Asian Country

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Abstract. *Women play a critical role in an economic and social well-being of a nation. Therefore, measuring the life satisfaction of women is important to see their view of life. Life satisfaction measures the overall life satisfaction. The study aims to determine whether there are differences in life satisfaction among working women in Malaysian from the perspectives of demographic characteristics. The measure of life satisfaction was based on the Life Satisfaction Scale. A purposive random sampling method was used to choose the sample. The analysis is based on responses from 302 working women. Independent t-test and one-way ANOVA are used to test the variables. Overall, the life satisfaction of the working women was found to be moderate in the study. The results of the study found significant differences in life satisfaction with regard to marital status, age, occupation, income, spouse's education, and spouse's income. However, ethnicity, education, spouse's age, spouse's occupation and number of children did not show to be significantly different. The Ministry in charge of women, family and society development could provide the necessary assistance to women who are having problems that could affect their life satisfaction. Women who are interested in opening their businesses could also be assisted by the relevant agencies to improve their income. Through this, they can assist their family financially. More policies supporting women should be introduced to assist or strengthen the position of women to move up professionally and socially.*

Keywords: age, life satisfaction, marital status, occupation, working women

JEL Codes: I0, J1

1. Introduction

Life satisfaction denotes the overall satisfaction in life. Having a good level of life satisfaction means the ability to manage life pressures well. According to Cakar (2012) life satisfaction is a process that includes commitment and positive effects among others to make life meaningful. Measuring life satisfaction in various age groups, gender and occupations among others has been done by researchers indicating this to be a critical field to study. Poorbarferani et al. (2018) pointed out that a low level of life satisfaction can lead to psychopathological systems which are anxiety, depression, and loneliness. It can also lead to risky behaviours such as violence and aggressiveness. This will be harmful to the individual, their families and colleagues at the workplace. Therefore, a study of life satisfaction is critical.

The role of women in a family unit is vital for the well-being of the family members. Conditions such as higher living costs, the need to increase income stability and protection against financial problems require women to earn to support the family needs (Ismail et al., 2015). Over the years, more women have entered the workforce. Working women take multiple roles such as taking care of the family as well as focusing on their careers. As working married women, they support their husband in providing income and managing their family. Single working women on the other hand, provide income for their parents and their siblings and take care of them as well. According to Abdul Razak et al. (2019), women are a critical component of a

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society. They are an important segment of a population and also in the development of a family institution. This indicates, working women is an important segment to be studied.

Malaysia is a country in Southeast Asia with a population of 32.75 million. Out of this total, women consist of 15.92 million in the first quarter of 2021 (Department of Statistics, Malaysia). Around 60 percent of women makes up the graduate enrolment in Malaysian Universities (The 11th Malaysia Plan, 2019). In terms of workforce distribution, women represent 5.83 million of the 14.96 million workforce (Labour Force Survey Report Malaysia, 2020). This points out the importance of women's contribution economically. According to Bailey et al. (2000), women contribute significantly to the economy of a country. Hrotkó et al. (2018) pointed out the findings of Boston Consulting Group where economic growth and society's well-being are tightly linked together.

Working women need to have a good level of life satisfaction since it will lead to higher work productivity. According to Diener and Tay (2012), several studies found life satisfaction at a higher level can have an impact on job satisfaction. In other words, this will lead to higher work productivity. The United Nations has pointed out the need to empower women in the economy and close the gender gaps in its 2030 Agenda for Sustainable Development. On the domestic front, marriages in 2019 decreased by 1.2 percent compared to 2018. Divorce on the other hand increased by 12 percent in 2019 compared to 2018. In other words, these facts might not imply a good sign of women's satisfaction in life.

Toker (2012) points out that life satisfaction is the degree of positive evaluation of the overall quality of one's life as a whole. Studies related to life satisfaction has been done across the globe. Researchers have done studies in Western countries (Antaramarian, 2017; Crowley, & Walsh, 2018), Iran (Mifarhardi et al., 2013), Turkey (Toker, 2012; Erdamar & Demire, 2016) and Nigeria (Oladipo et al., 2013). In terms of Asian countries, studies on life satisfaction have been conducted in countries such as Japan (Yamasaki, et al., 2011), China (Huang et al. 2018), India (Ghosh, 2016), as well as Malaysia (Arshad et al., 2015; Siti et al., 2017; Sabri et al. 2021). Nevertheless, the focus of the studies differs. Some studies include just a specific type of occupation such as academics, nurses, or teachers, while others are general. There are also studies based on age groups such as the elderly, teenagers, university students, or gender.

The current study focuses on working women. This is because they contribute both economically and socially whether married or otherwise. Women consist of half the population of Malaysia. An attempt is made to study the life satisfaction of working women since very few studies have been done in Malaysia. Sabri et al.'s (2021) study was on the women as the head of the household. The study focused on factors that may contribute to life satisfaction such as locus of control, religiosity, financial vulnerability, and financial capability. Siti et al. (2017) concentrated on career women however, only on the middle age group. Furthermore, literature on life satisfaction has shown to have mixed results specifically from the demographic perspectives. Due to the research gaps, the current study will do a comparative analysis of working women's life satisfaction based on a number of demographic characteristics in the Malaysian context. In addition, there is limited study on spouse characteristics such as age, education, occupation, income as well as number of children which is another research gap that would be addressed in this study. The specific objectives are to determine whether there are any differences in life satisfaction concerning demographic characteristics. The demographic characteristics that are included are ethnicity, marital status, age, education, income, occupation, spouse's age, spouse's education, spouse's occupation, spouse's income and number of children.

Life satisfaction is considered an intrinsic component of well-being, including the person's attitude, his/her general assessment of the totality of one's life, or some aspect of life, such as family life and educational experience (Diener & Lucas, 1999). The Satisfaction of life scale (SWLS) by Diener is the most used scale

in measuring life satisfaction. Life satisfaction occurs when the expectations and needs of people are satisfied and he/she is satisfied with his/her life.

A high level of life satisfaction would mean the individual has a low level of stress and does not face much of a problem either at home or at the workplace. This will result in a happier and more confident individual.

According to Toker (2012) who did a study on academicians found age has an impact on life satisfaction where the older academicians have higher life satisfaction compared to those of younger age. Akman (2021) found life satisfaction increases with age. However, findings by Jan and Masood (2008) showed different results where although age is found to relate to life satisfaction, it is a negative relationship. As age increase, life satisfaction decreases. This is supported by a study in China where it was found young age is negatively associated with life satisfaction (Huang et al. 2018). This indicates finding related to age and life satisfaction are mixed.

Generally, education has a positive impact on life satisfaction, that is the higher the education level, the higher the life satisfaction. Education level is found to have a positive relationship with life satisfaction (Tahsin et al. 2014; Crowley, & Walsh, 2018; Priambodo et al., 2021). Similarly, Akman (2021) found that life satisfaction increases with an increase in the level of education. According to Jan and Masood (2008) there are differences in general life satisfaction among women who have education at different levels. It is found that women with college/university education have the highest life satisfaction. However, Gong et al. (2011) reported contradicting results where lower education levels provided higher life satisfaction in Australia. Siti et al. (2017) on the other hand reported that education level does not contribute to life satisfaction in their study of middle-aged or elderly women. Generally, findings in terms of education and life satisfaction relationship are mostly positive.

Occupation is another characteristic that has been studied in life satisfaction. Toker (2012) who did a study on academics found that professors have the highest level of life satisfaction in comparison with other academic positions such as assistant professor, instructor, or research assistant. This result indicated that occupational level influences life satisfaction. Siti et al. (2017)'s study revealed a different level of life satisfaction for different occupational categories such as those working in the public, and private sectors and those who are self-employed. Higher life satisfaction was observed for those working in the public sector. The position of the occupation level is generally based on education qualification. In addition, experience, effort and performance lead to promotion. Thus, the higher the position level or occupation, it will lead to higher life satisfaction.

Toker (2012) found income is significantly related to life satisfaction in his study of academic-related professionals. In the study of nurses (Mifarhadi et al., 2013) and married women in health centers (Poorbaferani et al., 2018) in Iran, the relationship between life satisfaction and income is positive. Similarly, income is also found to have an impact on the life satisfaction of women in Malaysia. As income increases, life satisfaction also increased (Siti et al., 2017). Earlier studies by Jan and Masood (2008); Easterlin et al. (2012) and Tahsin et al. (2014) provided support for the positive relationship between income and life satisfaction. However, Lora and Chaparro (2008) indicated increment in income does not always contribute to better life satisfaction. The majority of the studies revealed that income is a significant predictor of life satisfaction. This is due to the higher the income, the more requirements in life can be obtained more easily.

Marital status is also a factor that contributes to life satisfaction. Verbakel (2012), Kalantarkousheh et al. (2014) and Ghosh (2016) observed those who are married are happier and comparatively more satisfied with life than unmarried ones. This is supported by Siti et al. (2017) who reported higher life satisfaction among married women while Manee et al. (2022) found that marital satisfaction has a direct effect on life satisfaction. Tahsin et al. (2014) found those who are divorced have negative life satisfaction. However, Toker (2012) found no difference in life satisfaction among different marital statuses in his study of

academics. This is in line with an earlier study by Jan and Masood (2008) when they compared single, married, and divorced individuals. Generally, married women can find support from their husbands. They can discuss problems or issues with their husband and collectively decide on a suitable solution. The support they received from the spouse will ease their burden and thus lead to a higher level of life satisfaction as found in previous studies.

Based on the review of the literature, the following research hypotheses were formulated:

H1: There is a significant difference in life satisfaction between the groups based on the marital status of working women.

H2: There is a significant difference in life satisfaction among ethnic groups of working women.

H3: There is a significant difference in life satisfaction among various age groups of working women.

H4: There is a significant difference in life satisfaction among working women groups based on their education level.

H5: There is a significant difference in life satisfaction among groups based on the occupation of working women.

H6: There is a significant difference in life satisfaction among income groups of working women.

H7: There is a significant difference in life satisfaction of married working women with regard to spouse's age.

H8: There is a significant difference in life satisfaction of married working women with regard to spouse's education.

H9: There is a significant difference in life satisfaction of married working women with regard to spouse's occupation.

H10: There is a significant difference in life satisfaction of married working women with regard to spouse's income.

H11: There is a significant difference in life satisfaction of married working women with regard to the number of children.

2. Research Elaboration

The respondents of the study are working women. A purposive random sampling technique is used to collect the data and a questionnaire method is used for the same. The questionnaire focused on the demographic characteristics of working women which include age, education, ethnicity, income, and marital status. For married women, additional questions on their spouse's demographic characteristics were posed. The instrument for the Life Satisfaction measure was based on Satisfaction with Life Scale (SWLS) by Diener et al. (1985). There were five questions. The questions were measured using Likert Scale. Pilot testing was done first to test the reliability and validity of the instrument. After the reliability and validity were satisfied the field survey was carried a total of 500 questionnaires were sent through the personally administrated method and online method. The data collected is analysed using the SPSS Version 26. The statistical

analysis method used to analyse the data include Independent t-test and one-way ANOVA. They were used to assess differences in the level of life satisfaction related to demographic questions.

3. Results and Discussions

The total number of respondents for this study is 302. Power analysis using G*Power with an effect size of 0.25, alpha 0.05, and power 0.8 resulted from a minimum sample size of 269. Thus the sample of 302 is sufficient to conduct the data analysis. The Cronbach alpha for the instrument is 82.5 percent which is more than the desirable value of 70 percent. The demographic profile of the respondents in terms of working women is presented in Table 1. In terms of ethnicity, the majority are Chinese 165(54.6 percent) followed by Malays 101 (33.4 percent), Indians 27 (9 percent) and others 9 (3 percent). Based on marital status there are 184 (60.9 percent) women who are single and 118 (39.1 percent) women who are married. There are 157 (52 percent) women who are in the age group 21 – 30, followed by 106 (35.1 percent) women in the age group of 31 – 40 years. Those in the age group of 41 – 50 years, consist of 27 (8.9 percent) women, while women in the age group of 51 and above are 12 women (4 percent).

About half of the respondents viz 159 (52.6 percent) had studied Bachelor's Degree. This is followed by Diploma holders, 85 (28.2 percent), while 39 respondents (12.9 percent) had completed Secondary education. There are 18 (6 percent) respondents who had postgraduate education. In terms of occupation, 19.5 percent of the respondents are at the executive level, while 17.2 percent are at the clerical level. There are respondents in the teaching field which accounts for 11.3 percent, while those in government-related jobs are 5.3 percent. Respondents at the managerial level are around 7.6 percent. The respondents with an occupation other than this in the private sector account for 39.1 percent which include their own business, and technology field among others.

The distribution of the respondents based on salary shows around 37.1 percent of respondents' salary range from RM 1001-RM3000. Those in the range from RM3001-RM6000 are 35.8 percent. Around 15.2 percent of the respondents are in the salary range of RM6001-RM9000 while 8.3 percent are in the salary range of above RM9000. Only 3.6 percent of the respondents have a salary below RM1000.

Table 1 – Profile of Respondents

Demographic Characteristics	N	Percentage
<u>Ethnicity</u>		
Malay	101	33.4
Chinese	165	54.6
Indian	27	9.0
Others	9	3.0
<u>Marital Status</u>		
Single	184	60.9
Married	118	39.1
<u>Age</u>		
21-30	157	52.0
31-40	106	35.1
41-50	27	8.9
51 and above	12	4.0
<u>Education</u>		
Secondary	39	12.9
Diploma/Foundation	85	28.2

Bachelor	159	52.6
Postgraduate	18	6.0
Others	1	0.3
<u>Occupation</u>		
Clerical	52	17.2
Executive	59	19.5
Manager	23	7.6
Teacher/Lecturer	35	11.3
Government sector	15	5.3
Private sector	118	39.1
<u>Income</u>		
Below RM1000	11	3.6
RM1001-RM3000	112	37.1
RM3001-RM6000	108	35.8
RM6001-RM9000	46	15.2
Above RM9000	25	8.3

(Source: Developed for the study)

The spouse's profile of married working women is presented in Table 2. Based on those who are married, most of the respondent's spouses are in the age group of 31-40 which is around 44.1 percent, followed by the 41-50 age group which represented 28.8 percent of the total respondents. Next, is the age group of 21-30 with 15.2 percent, and lastly those with spouse whose age is 51 and above is 11.9 percent. The majority of the spouses have a Bachelor's level of education at 44.1 percent, while those at a Diploma level are 21.2 percent. Around 25.4 percent of the respondent's spouses have education at the secondary level compared to 5.9 percent at the postgraduate level. Another form of education is around 3.4 percent.

The occupation of the spouses of married women varied from clerical jobs to jobs in private and government sectors. Some spouses had executive jobs, 24 (20.3 percent) and managerial jobs, 10 (8.5 percent). Many of them are working in the private sector (45.7 percent). Those working as lecturers and government departments constitute 10.2 percent of each of the samples. There are only 6 (5.1 percent) spouses in the clerical cadre. In terms of salary, respondents whose spouses' salary ranges between RM3001-RM6000 is the highest at 41.5 percent. This is followed by those where the salary ranges between RM6001-RM9000 which is around 22.9 percent. Respondents whose spouses' salary ranges between RM1001-RM3000 is 20.3 percent. Those with spouses whose salary is above RM9000 account for 15.3 percent. Most of the respondents have 1-2 children at 44.1 percent while those with 3-4 children are 33.1 percent. Respondents with more than 4 children are 5 percent compared to those without children yet 17.8 percent.

Table 2 – Profile of married working women

Demographic Characteristics	N	Percentage
<u>Spouse's Age</u>		
21-30	18	15.2
31-40	52	44.1
41-50	34	28.8
51 and above	14	11.9
<u>Spouse's Education</u>		
Secondary	30	25.4
Diploma/Foundation	25	21.2
Bachelor	52	44.1

Postgraduate	7	5.9
Others	4	3.4
<u>Spouse's Occupation</u>		
Clerical	6	5.1
Executive	24	20.3
Manager	10	8.5
Teacher/Lecturer	12	10.2
Others-Government	12	10.2
Others-Private	54	45.7
<u>Spouse's Income</u>		
RM1001-RM3000	24	20.3
RM3001-RM6000	49	41.5
RM6001-RM9000	27	22.9
Above RM9000	18	15.3
<u>Number of children</u>		
None		
2 or less	21	17.8
3	52	44.1
4	25	21.2
5	14	11.9
More than 5	4	3.4
	2	1.6

(Source: Developed for the study)

Table 3 presents the mean analysis of life satisfaction. There are 5 questions and the mean ranges from 3.31 to 3.56.

Table 3: Mean Analysis of Life Satisfaction

Life Satisfaction	N	Mean	SD
The conditions of my life are excellent.	302	3.49	.81808
In most ways, my life is close to my ideal.	302	3.55	.77941
I am satisfied with my life.	302	3.56	.84818
So far, I have gotten the important things I want in life.	302	3.52	.89921
If I could live my life over, I would change almost nothing.	302	3.31	1.07330

(Source: Developed for the study)

An independent samples t-test is carried out to test if there is any significant difference in life satisfaction between single and married working women. As demonstrated in Table 4, the result indicates that there is a significant difference in Life Satisfaction based on Marital Status. Married women seemed to have a higher life satisfaction compared to single women. Hence, H2 is supported.

Table 4: Independent Samples t-test for difference in Life Satisfaction with respect to Marital Status

Demographic Characteristics	Group	Mean	F-value	Sig-value	Results
Marital Status	Single	3.33	2.630	0.000**	H2: Supported
	Married	3.72			

(Source: Developed for the study)

One-way analysis of variance (ANOVA) is performed to test if there is any significant difference in Life Satisfaction concerning ethnicity, age, education, and income for all the working women and for spouse's age, spouse's education, spouse's occupation, spouse's income and number of children for married working women.

The results of the ANOVA for all working women are presented in Table 5. In terms of ethnicity, the highest mean is for Indian, followed by others, Malay and the least is the Chinese. However, the difference is not significant. H1, is, therefore, not supported. In terms of age, the result indicated that the higher the age, the higher the life satisfaction and the difference is significant. The post hoc test revealed that the difference is between those in the age group of 21-30 with all of the rest of the group. H3, is, therefore, supported.

A significant difference is not found in life satisfaction with regards to education although generally the higher the education level the higher the life satisfaction. Therefore, H4 is not supported. In terms of occupation, the highest mean is found for managers, followed by teachers/lecturers. The post hoc results revealed that there are differences in life satisfaction between clerical and all the other types of occupation. In addition, significant differences also exist between executives and managers. Similarly, a significant difference is also found between others-private and managers. This means H5 is supported.

The result on life satisfaction based on Income identified that, the higher the income the higher the life satisfaction. The result also showed there is a significant difference when different income groups are compared. The post hoc results indicated the differences between those in the income group of RM1001-RM3000 with the rest of the group with higher income. There is also a difference between those in the income group of RM3001-RM6000 with those with higher income. Thus, H6 is supported.

Table 5 ANOVA results for the difference in Life Satisfaction for all Working Women

Demographic Characteristics	Group	Mean	F-value	Sig-value	Results
Ethnicity	Malay	3.49	1.920	0.126	H1: Not Supported
	Chinese	3.43			
	Indian	3.74			
	Others	3.73			
Age	21-30	3.30	9.062	0.000**	H3: Supported
	31-40	3.66			
	41-50	3.70			
	51 and above	3.93			
Education	Secondary (SPM)	3.48	1.140	0.240	H4: Not Supported
	Diploma	3.42			
	Bachelor Level	3.48			
	Postgraduate Level	3.80			
Occupation	Clerical	3.22	3.477	0.000**	H5: Supported
	Executive	3.44			
	Manager	3.79			
	Teacher/Lecturer	3.71			
	Others-Government sector	3.69			
	Others-Private sector	3.48			
Income	RM1001-RM3000	3.22	10.292	0.000**	H6: Supported
	RM3001-RM6000	3.49			
	RM6001-RM9000	3.80			
	RM9000 and above	3.98			

(Source: Developed for the study)

Table 6 presents the result of differences in life satisfaction for married working women in terms of spouse's characteristics such as age, education, occupation and income. In addition, the number of children is also tested to identify whether there are differences in life satisfaction.

Life satisfaction is found not to be significantly different when different groups of spouses' ages are compared. H7 is, therefore not supported. In terms of the spouse's education, the result indicates that the higher the spouse's education level, the higher the life satisfaction of the working women. The post hoc test reveals that other levels of education are significantly different from diploma, bachelor degree level and postgraduate level. The result, therefore, supports H8.

The spouse's occupation does not show to have an impact on life satisfaction. There was no significant difference found in life satisfaction about the spouse's occupation. H9 is thus, not supported. The result shows that the life satisfaction of working women increases as the income of the spouse increases. Post hoc results indicate that those with the highest level of income that is above RM9000, seemed to have the highest level of life satisfaction and it is significantly different from all the other groups of income. In addition, the life satisfaction of women whose spouse's income is between RM1001-RM3000 is also significantly different from those with a spouse's income between RM6001-RM9000. Based on this result, H10 is supported. There is no significant difference in life satisfaction in the number of children. Therefore, H11 is not supported.

Table 6 ANOVA results for the difference in Life Satisfaction of married Working Women

Demographic Characteristics	Group	Mean	F-value	Sig-value	Results
Spouse's Age	21-30	3.60	1.324	0.270	H7: Not Supported
	31-40	3.65			
	41-50	3.81			
	51 and above	3.94			
Spouse's Education	Secondary (SPM)	3.53	2.938	0.024*	H8: Supported
	Diploma	3.74			
	Bachelor Level	3.83			
	Postgraduate Level	3.97			
	Others	2.93			
Spouse's Occupation	Clerical	3.10	2.243	0.055	H9: Not Supported
	Executive	3.58			
	Manager	4.10			
	Teacher/Lecturer	3.85			
	Others-Government sector	3.62			
Spouse's Income	Others-Private sector	3.77	10.322	0.000**	H10: Supported
	RM1001-RM3000	3.41			
	RM3001-RM6000	3.62			
	RM6001-RM9000	3.83			
Number of children	RM9000 and above	4.32	2.220	0.09	H11: Not Supported
	None	3.74			
	Less than 2	3.74			
	3	3.58			
	4	3.86			
	5	3.77			
	More than 5	4.05			

(Source: Developed for the study)

Discussion

Woman plays an important role in maintaining the stability of a family. This has been highlighted by Abdul Razak et al. (2019) who pointed out that women as a critical component of society and family institutions. Similarly, Vanitha (2013) indicated women are the makers of family and society. She further added that women significantly contributed to the economy. Therefore, the study focused on working women. The objective of the study is to identify whether there are any differences in life satisfaction with respect to the demographic characteristics of working women. The motivation for the study is based on the existing gap whereby there are limited studies done on working women's life satisfaction. It is noted that there are not many studies done on working women specifically about the spouse's demographic characteristics and also from the Malaysian context.

The result indicated that marital status has an impact on life satisfaction. Married working women have higher life satisfaction compared to single working women and the difference is significant. This result is in line with the previous study by Siti et al. (2017) and Manee et al. (2022). Marriage is a reciprocal relationship with strong commitment. Having a spouse provides support and also companionship. This is probably why married women have higher life satisfaction compared to single women. In an Eastern culture such as Malaysia, marriage is critical for the well-being of a family.

Age is another critical factor related to the life satisfaction of working women. It is found that the older the age of the working women the higher the life satisfaction. In addition, the difference is significant. The current result is similar to the findings of Toker (2012). This strengthens the fact that as women matures in age, they can face and manage the challenges in life better and thus, achieve higher life satisfaction.

The occupation of working women matters to life satisfaction. Managers and lecturers seem to have higher life satisfaction than clerical staff. The current result is found to be in line with researchers like Toker (2012) who found occupation does have an impact on life satisfaction. Those in the managerial post have a higher life satisfaction, compared to executive and clerical. Those in the teaching profession seem to have a higher life satisfaction together with those in the government sector. Based on the result it is found those in an occupation that generates higher income shows to have higher life satisfaction. The higher the level of occupation the more the life satisfaction is. This could be due to the satisfaction towards their working life and the status of their position, which in turn affects their life satisfaction positively.

The result also found that the higher the income, the higher the life satisfaction of working women. This result further strengthens the findings on the role of income in life satisfaction. A similar observation is found by Toker (2012), Easterlin (2012), Mifarhadi et al. (2013) and Siti et al. (2017). The result is found to be similar across different occupational groups such as academics and nurses. The reason is probably income provides status and financial stability to the family. Having financial security will ease the burden in the family and thus, there will be less stress in the family. This is more so with the increasing living cost. Furthermore, if the working women are married and have children, the higher the income the better it is.

Surprisingly, there were no differences in the life satisfaction of working women in terms of education. Although previous studies have found that education does affect life satisfaction (Crowley, & Walsh, 2018; Priambodo et al., 2021), nevertheless the current result is supported by Gong et al., (2011) and Siti et al. (2017). The result of this study indicated that education itself does not provide direct surety on how a person can achieve life satisfaction. However, through education, it indirectly provides the ability to secure a certain profession. The higher the education level, the higher level of occupation could be obtained. This would then be linked to income as well. The result shows that ethnicity is not an indicator of the life satisfaction of

working women, rather other demographic factors such as age, income, marital status and occupation are more relevant in impacting the life satisfaction of working women.

Results on spouse characteristics found differences in the life satisfaction of married working women in terms of both the spouse's education and income. This could be due to spouses playing a critical role because married couples are dual earners. With the increasing cost of living, both husband and wife have to earn and provide the family with a comfortable living. Therefore, a spouse's education and income matter to the married working women's life satisfaction. However, no difference was observed in the life satisfaction of married working women from the perspective of the spouse's age and the spouse's occupation. This means the age of the spouse as well as the spouse's occupation do not have an impact on the life satisfaction of married working women. Similarly, the number of children is not an indicator of life satisfaction of these women. However, majority of the married working women have children and this does lead to life satisfaction.

4. Conclusion

The role of women is becoming more critical, both economically and socially. Working women need to balance their work life and family responsibility to achieve life satisfaction. Women need to have a good level of life satisfaction to contribute effectively towards work productivity. In the current environment, the challenges of life such as the rising cost of living, balancing work and life, and managing family unity are very crucial. Factors that contribute to life satisfaction include a good education, occupation and income. For married women, a good life partner, who provides support in managing the family well is important. Women are still lacking behind men in terms of leadership positions, whether at work or in the political field. Political leaders should come up with policies that can uplift the women's economic and social status. According to Helliwell et al. (2017) there is variance among countries in terms of life satisfaction. Countries with higher economic prosperity generally have higher average life satisfaction compared to those with a lower level of economic situation. Therefore, developing countries should put more effort towards increasing life satisfaction for the well-being of the society. One of the ways is uplifting women socially and economically. In some countries, there are special ministries that specialise in women and women-related matters. In Malaysia, there is the Ministry of Women, Family, and Community Development which is in charge of women and family well-being. In Indonesia, the women-related matters are under the preview of the Ministry of Women's Empowerment and Child Protection. In Singapore, there is the Office for Women Development under the Ministry of Social and Family Development. The office looks into matters related to women's development. The relevant ministry and agencies should reach out to women with low life satisfaction and having problems with whether with their marriage, family life, or work life. It should identify suitable assistance for working women. Activities such as having talks at the workplace, will provide information to the target group. In addition, working together with non-governmental organisations that have access to working women with problems is another way to reach them. They can organise activities that could help these women. Women, on the other hand, should be informed of the assistance that they can get to encourage them to come forward to get professional assistance to solve their problems. This includes motivation and counselling especially for those with mental and psychological issues. Policies at the governmental level should address the well-being of women and families. Similarly, women should be given the guidance and the required assistance especially those interested in business. The relevant ministry could identify and channel suitable assistance to the women who need to support their families financially. Some working women are interested to open up their own businesses but do not have the required knowledge. Thus, business-related training and workshops would be helpful to them. This includes reaching out to the target group. In addition, financial assistance is another area that would be helpful to prospective women entrepreneurs for their start-up capital and pursue their business aspirations. The study has its limitations.

The study focused only on working women. Future studies may consider non-working women in studying life satisfaction.

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Measures of Socio Economic Status of Farmers – A Systematic Literature Review

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Abstract. *Socio-economic status (SES) is conceptualized as the social and economic standing or class of an individual or family. Socio-economic status of farmers is an important variable in agricultural social sciences studies. While it is often estimated with various indicators, however, these indicators are inconsistent and irrelevant. An attempt was made to extract the various variables used to measure the socio-economic construct and redefined it into a precise concept. A systematic review of the studies reporting the socio-economic conditions of farmers was performed by adopting the preferred reporting items for systematic reviews and meta-analysis (PRISMA) best practices method and identified 235 studies. Vote counting was used to generate the determinants of SES in the selected studies. It was observed that the measures of SES in agricultural studies were scattered and obscure. From the extracted measures, based on the SES concept, 39 variables were identified, redefined, and relevant indicators were classified into two groups: social and economic status. These include their education, occupation, income per capita, expenditure, savings, land ownership, livestock status, indebtedness, area under crops and material possession in house and farm, housing conditions, social participation, family size, caste/race, marital status, dependency ratio, extension contact, and mass media participation. The above-mentioned variables under the social and economic standing of farmers could be adopted by the researchers, and policymakers in Asian and African sub-continent based on the areas of interest in studying the SES of farmers.*

Keywords: agriculture, class, extension, farmers, position, review

JEL Code: Q10

1. Introduction

Socio-economic status (SES) plays an important role in significantly influencing one's access to basic resources, way of life, and other factors including food availability and nutritional status, etc. (Smith, 2005; American Psychological Association, 2007; Surabhi and Mamta, 2016). One of the most crucial variable in social science studies and research is socio-economic status (SES), which influences a sample's psychological and behavioral characteristics, including knowledge, attitude, perception, adoption, innovativeness, aspiration level, economic motivation, etc. (Budry and Curtis, 2007; Raza et al., 2015; Pratima and Poonam, 2019; Daniel et al., 2022). From this point of view, the estimation of the socioeconomic conditions of the farmers cannot be undermined. Sociologists and economists over the years comprehended social inequality and social attitudes, toward an individual's socio-economic status, but the two disciplines have measured SES differently. The measurement of SES differs even with the individuals' profession being from either urban or rural. Socio-economic status measure is a combination of both the social and economic standing of an individual or family. The definition of socio-economic status proposed by F. Stuart Chapin: "evaluates the position of a person's family or household in society as well as their access to financial, cultural, social, and human capital. According to Gaur (2013) based on many factors that

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influence social and economic development, socio-economic status (SES) is a measurement of a family's position in relation to others on both an economic and social level. A family's socioeconomic standing refers to where the family stands in relation to certain stated characteristics, such as their assets, economic and social situation, education, occupation, social involvement, caste, strength, and political influence, among others (Tiwari et al., 2005). Based on the above definitions it can be concluded that socio-economic status is a multi-dimensional construct measured from the observed factors. Thus, socio-economic status is viewed as a complex pattern made up of related components that work as a whole to elicit a response. In other words, these definitions propose that many elements consistently interact to establish the family's or an individual's status.

This study was attempted by the author in order to collect items as part of scale developed for measurement of SES of farmers. There are several economic and social variables that define SES. Though these variables are selected based on the suitability of the particular study, they are wide and scattered as observed from the decade-old persistent literature that highlights the socio-economic profile of farmers (Rakesh 2004; Shailash and Gyanendra, 2009; Suresh et al., 2015; Dheerendra et al., 2020; Guleria et al., 2020). Even in the psychological literature because of measurement inconsistency, the entire spectrum of SES was not covered as reported by American Psychological Association, 2019. So with certain times, an attempt should be made to pass beyond expressing the socio-economic conditions of farmers in vague and indefinable notions to a more precise concept. Based on the above-mentioned definitions, the variables determining the socio-economic status of farmers can be narrowed down and defined in a standard and systematic way in agriculture research. This research contributes to how SES should be conceptualized and measured by complementing it with measures indicative of assessing SES in current agricultural social sciences research. Hence, the study attempts to answer the research question, what are the measures of SES of farmers. With this aim of arriving at measures of SES, a systematic review was performed in this study.

A systematic literature review is a formal and standard research method that finds, evaluates, and analyses studies that have all attempted to address a similar subject. A systematic review is a formal research study that follows a clear, predefined structure to find, assess and analyze studies that have all tried to answer a similar question. Synthesis of multiple studies will be a challenging task for the researcher due to heterogeneity concerning sampling, differences in reporting results, and location-specific nature of agriculture. However, the analysts also combine the study results numerically to create a summary estimate in addition to the narrative summary. (Bhuvana et al., 2019a). By undertaking a systematic literature review, this study contributes to the establishment of valid and consistent variables measuring SES of farmers that have an influence on the domains of knowledge, adoption and impact studies of farmers (Brijendra et al., 2020; Dheerendra et al., 2020).

Methodology

Literature Search Strategy

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) technique was used for systematic review. The search was performed in databases like Google Scholar, Scopus, and Science Direct. Various combinations of algorithms related to the SES of farm families were considered and the outcome of interest was used as input to search for research papers. Algorithms included combinations of keywords from each of the following categories: a) socio-economic status b) "socio-economic profile" c) "socio-economic variables" and d) "socio-economic conditions".

For the initial screening of the articles, inclusion and exclusion criteria were established (Table 1). For further extraction of articles from title, and abstract screening, the studies that a) considered the socio-economic characteristics as an outcome and b) included at least three determinants from socio-economic, social, or economic characteristics d) the sample should be farm families/farmers were selected.

Table I: Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Initial identification		
Literature type	Research articles	Review papers, conference papers, book chapters, and series
Source type	Journal	Trade journal
Publication stage	Final	Press
Access type	Open source	Restricted access
Subject area	Agricultural, environmental, social and biological sciences, Economics, Econometrics and Finance, Veterinary	
Language	English	Non-English
Timeline	2000-2022	<2000
Screening		
Title and abstract	<ul style="list-style-type: none"> Existence of predefined keywords in the title, abstract, or keywords part of the paper. Considered the socio-economic characteristics as an outcome. Sample should be farm families/farmers. 	
Full text	<ul style="list-style-type: none"> Included at least three determinants from socioeconomic, social, or economic characteristics 	

Statistical synthesis

The simplest but limited method of systematic review: vote counting, was employed for analyzing evidence from numerous evaluations. Vote counting involves counting the number of positive studies with the number of negative studies (Jessica and Subhrendu, 2012). For this study with a slight modification, vote counting was used to generate the determinants of SES in the studies selected (Muhmaad et al., 2015; Bhuvana et al., 2019b). A vote is cast for each of the variables measuring SES from each study. This coding is repeated for all the variables identified in the studies. Vote counting thus offers a helpful beginning point for a detailed evaluation of studies for a certain research topic, allowing it to be useful in arriving at a pool of items to be considered for the development of standard measuring tools.

2. Results and Discussions

The number of studies from each database using the above-mentioned search strings was presented in table 2. The database search resulted in a total of 10,780 articles. From the automation filters provided by the databases, 9551 articles were marked as ineligible using the inclusion and exclusion criteria determined for initial identification (e.g.non-English, restricted access, review papers, etc.) and deleted from the records.

This shows that the term socio-economic is part of many studies but not necessarily all these studies measuring the socio-economic phenomenon of farmers. From the remaining 1229 articles, using the Rayyan software, 407 articles were excluded after duplicate removal.

Further after screening the title and abstract 521 studies were eliminated for not having socio-economic status as an outcome, non-farmer population, non-existence of predefined keywords in the title, abstract or keywords part of the paper. Based on the eligibility criteria of including at least three determinants of SES, a total of 66 studies were eliminated from the available 301 studies, after a thorough screening of the full text. A total of 235 studies were chosen for quantitative analysis based on suitability, relevancy, and clarity of addressing socio-economic variables.

Table II: Keywords used and the total number of publications from databases

Databases	Search strings and search terms		No of articles
Scopus	Main searching terms	"socio-economic status" AND "determinants" AND "farmers"	19
		"socio-economic status" AND "farmers"	331
		"socio-economic conditions" AND "farmers"	350
		"socio-economic conditions" AND "determinants" AND "farmers"	15
		"socio-economic variables" AND "determinants" AND "farmers"	21
		"socio-economic variables" AND "farmers"	131
		"socio-economic profile" AND "determinants" AND "farmers"	6
		"socio-economic profile" AND "farmers"	76
Science Direct	Main searching terms	"socio-economic status" and "determinants" and "farmers"	1027
		"socio-economic status" AND "farmers"	3093
		"socio-economic conditions" AND "determinants" AND "farmers"	655
		"socio-economic conditions" AND "farmers"	2717
		"socio-economic variables" AND "determinants" AND "farmers"	595
		"socio-economic variables" AND "farmers"	1278
		"socio-economic profile" AND "determinants" AND "farmers"	119

		"socio-economic profile" AND "farmers"	347
Google Scholar	Main searching terms- in the title of the article	"socio-economic status" AND "farmers"	125
		"socio-economic conditions" AND "farmers"	22
		"socio-economic variables" AND "farmers"	7
		"socio-economic profile" AND "farmers"	67

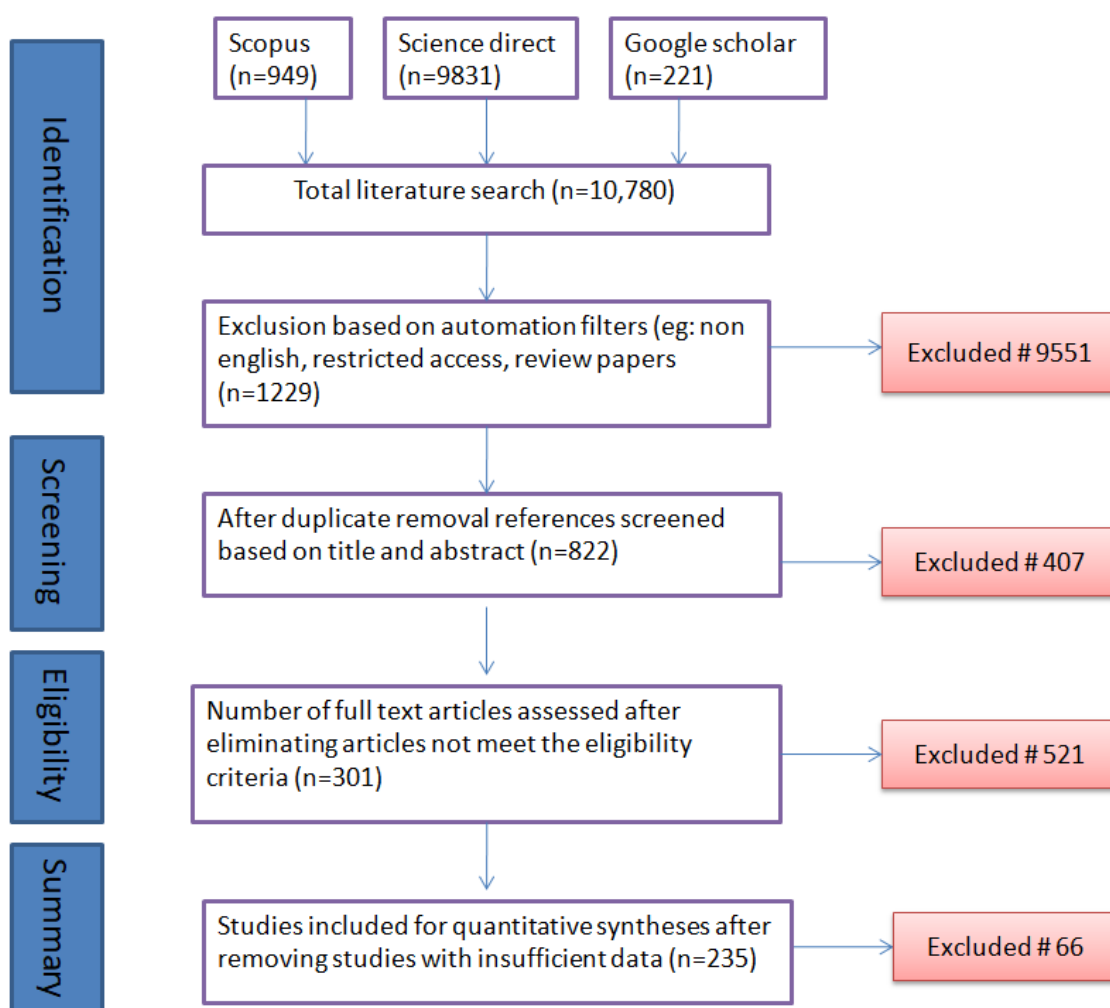


Figure 1: PRISMA flowchart depicting the number of studies inclusion and exclusion for identifying the determinants of SES (adapted from Mengist et al., 2020).

Description of the sample of the selected 235 articles

Among the 235 articles, 152 articles belonging to the Indian sub-continent and 83 articles are from other parts of world include African, Asian sub-continent. A very minute sample of articles belong to Europe and South American parts including countries like France, Croatia, Romania, Peru, Brazil and Argentina. Among the Asian continent articles belong to majorly from China, Nepal, Bangladesh and Philippines. Whereas, African countries include Rwanda, Nigeria, Tanzania and Ethiopia. The sample population of all the articles includes farmers practicing agriculture, fisheries, dairy (goat, sheep, cattle) etc.

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occupational status also included as an alternative indicator of SES (Le Grand and Tahlin, 2013; Alexander et al., 2017). The social class of farmers was based on their self-employed occupation with grouping based on the level of employment provided (Alexander et al., 2017). Level of education was considered to be the most significant variable in measuring SES as it was considered to be influencing one's occupation and income earned (Mirowsky and Ross 2003; Shavers, 2007). Michalet al. (2021) in their study on socioeconomic determinants of small family farms identified different variables under social and economic status. The economic position included their income, value of land, investment capacity, and value of household material situation. Kar and Dhara (2007) stated the status of agricultural workers in terms of literacy level and economic condition. Whereas farmers' social context was provided in terms of them being a member of either a farmer group or a cooperative group depicting their social participation (Natashaet al., 2022).

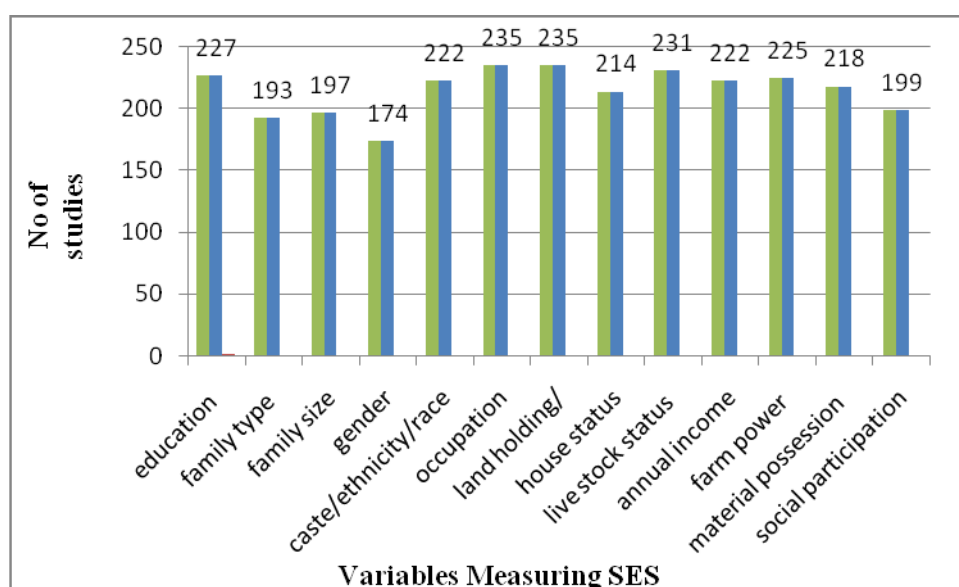


Fig 3: Frequency of variables in more than 75 per cent of studies measuring the SES of farmers

Figure 4 depicts the variables which were included in 50 -75 per cent of studies. These variables include extension contact, farming experience, agricultural implements, marital status, age, and mass media participation. Variables depicting the crop and cultivated land status such as cropping intensity, area under crops, source of irrigation, and irrigated area were also selected for the socioeconomic status of farmers (Sharma et al., 2022). Animal housing pattern was observed as an important variable in determining the SES of farmers especially dairy farmers (Kumar and Tripathi, 2012; Bishist et al., 2022). Subsidiary occupation in addition to the primary occupation of the farmer was also considered as it would be providing employment during the lean season which in turn would assist in the betterment of their economic conditions (Pandey et al., 2015; Panda et al., 2022). Moving to the next set of variables which were found in a few studies as depicted in figure 5. As such variables like indebtedness, savings, expenditure, and investment, though less frequently considered, define the economic position of the individual (Gaur, 2013; Onwujekwe et al., 2006; Kamakura and Mazzon, 2013; Kyriopoulos et al., 2016). Indicators such as value orientation, economic motivation, cosmopolitaness, risk orientation, and scientific orientation were employed in studies, analyzing the socio-economic factors affecting the behavior i.e. knowledge and adoption of farmers (Gandhale et al., 2022). However, these variables do not suggest the socio-economic position of the individual. The other variables include the effect on crops, ownership pattern, and their annual employment days. The ownership pattern variable depicts the state of their cultivated land, which would eventually be described in their land-holding status.

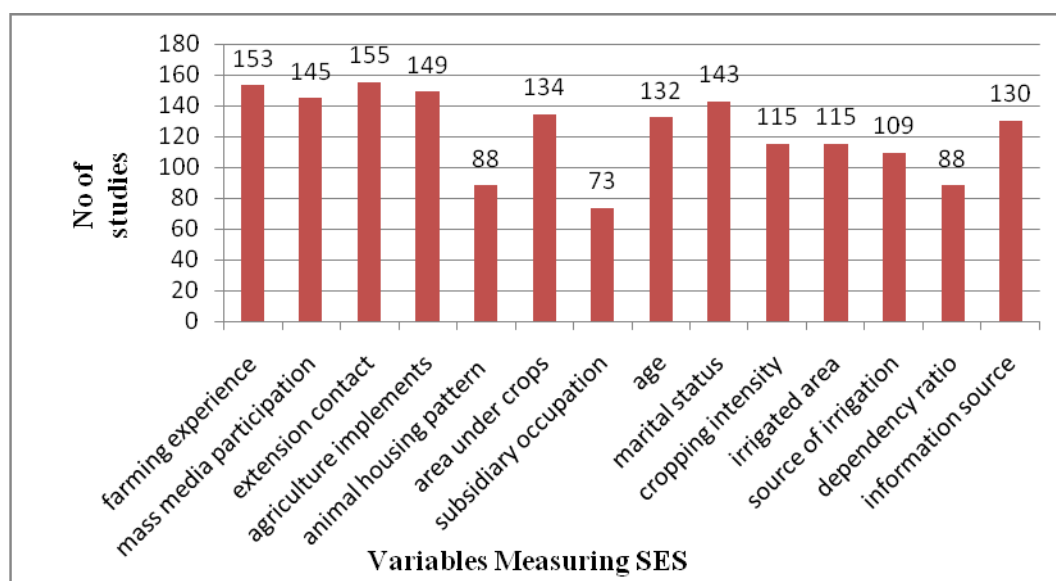


Fig 4: Frequency of variables in 50 -75 per cent of studies measuring the SES of farmers

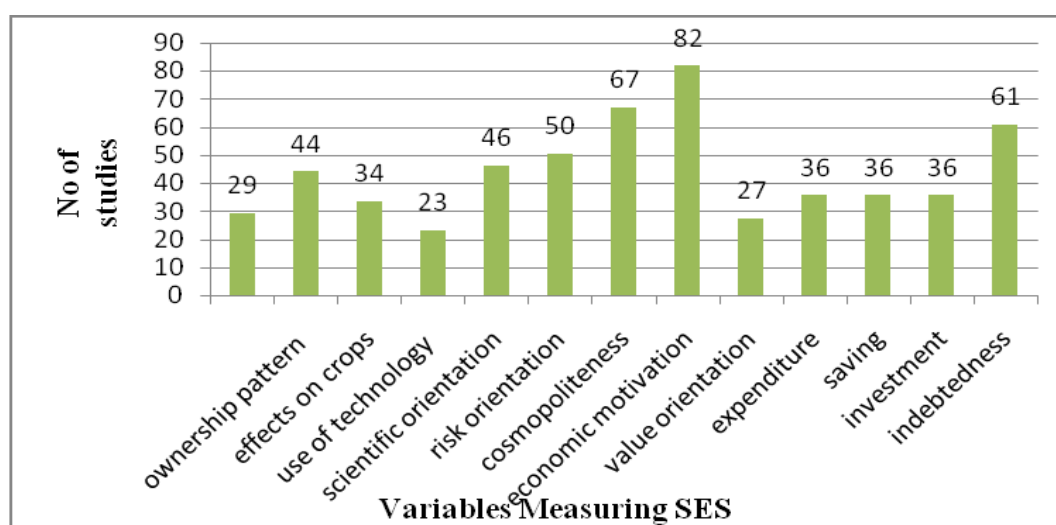


Fig 5: Frequency of variables observed in below 50 per cent of studies measuring the SES of farmers

From the 235 studies that have been assessed to establish determinants of the socio-economic status of farmers, it could be inferred that the variables measuring the multi-dimensional construct SES were scattered and definite variation was observed. From the above-retrieved variables, consistent and valid indicators reflecting the SES of farmers needs to be identified. For the present study, the definition of SES of farm families was considered in terms of their social and economic position. The economic status is defined as the position of farmer in society determining their income situation which in turn shaped the family's quality of life constitutes their social status (Deshmukhand Akkilagunta, 2020; Michał et al., 2021). The income situation of farmers would be determined not only by the mere amount but also by leading factors to it such as their education, occupation, land holding, livestock number, farm power, and type of crops they grow (Baumer, 2002; Tuyen, 2015). This income situation which would be affected by their indebtedness, savings, and expenditure also depicts their economic standing, but these variables could be employed when excessively focused on their economic and financial status. The social position of the individual reflects their living standard and the prestige associated. It includes their caste, cultural and event participation, housing conditions, material possessions in the house, and family size (Bourdieu, 1986; Tiwari et al., 2005;

Britannica, 2019). As for farmers, contact with extension agents, and mass media participation also determines the extent of progressiveness associated with the prestige in the village. The various psychological variables could be deleted as they directly do not deliver to the materialistic and access approach of SES observed in the definitions (Deshmukhand Akkilagunta, 2020; Worthy et al., 2021). Based on the definition, and review in terms of both economic and social status some items were deleted and the following determinants were finalized under economic and social positions.

The following are major variables considered from the analysis under economic and social status:-

Economic status of farmers includes their education, occupation, income per capita, expenditure, savings, land ownership, livestock status, indebtedness, area under crops, and material possession in house and farm.

Social status include their housing conditions, social participation, family size, family type, caste/race, marital status, dependency ratio, extension contact, and mass media participation.

Research areas

The main research topics of selected studies measuring the SES of farmers were also analyzed. Based on their dependent and independent variables five exclusive categories were identified. The first three areas refer to psychological and behavioral components of the sample with studies referring specifically to their knowledge, attitude/perception, and adoption. A fourth category refers to impact (e.g., of technology, scheme, program). Finally, a fifth category comprises of household dynamics and demography (e.g. wealth, poverty, income inequality) referring to the current position of an individual.

Figure 6, below indicates that research on family dynamics depicting their current economic and social well-being in society was observed to be the highest (64 studies). This possibly indicates the importance of SES measurement in rural sociological research which aids to identify and quantify the factors which are inhibiting their growth and development. Impact studies were found to be the next prominent research area (53 studies) as assessing the SES of stakeholders indirectly measures the success of any technology, scheme, and program implemented. Adoption, perception/attitude, and knowledge level of farmers were other areas where focus on the socio-economic profile of farmers was assessed as it often predicts these psychological and behavioral components of farmers. Around 32 studies accounted for other residual areas such as farmer participation in rural development activities, and access to resources (credit, input, etc.) which were found to be affected by their socio-economic conditions. Overall the results conclude that SES measurement of farmers was a basic requisite for sociologists as it was closely intertwined with all the subfields in the sociological research domain.

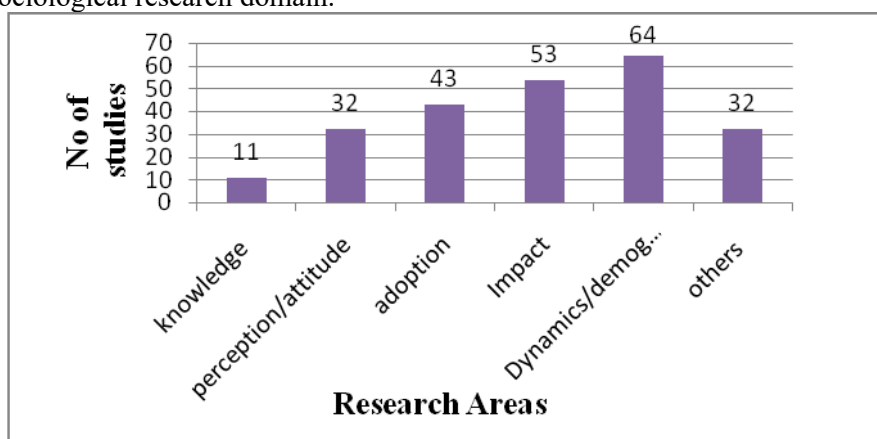


Fig 6: Frequency of SES measures in studies by research area

Limitations of the present study

As our focus was mainly on identifying the measures of SES, the empirical results were not taken into consideration as SES being a construct rather than a dependant variable measured with composite variables. Detailed list and description of all the sample 235 articles could not be presented due to space and

time constrain in the study. The results of the study focused, mainly, on the concept identification and adding to body of knowledge rather than a directly dealing with empirical data. As the sample mainly consists of articles from India and other parts of Asia and Africa, the generalization of results for farmers all over the world could be limited.

3. Conclusions

The fundamental conceptualization of SES involves access to resources. It also involves the materialistic approach of their income situation affecting their living standard. Farmers' socio-economic position plays a major role in understanding their access to resources which in turn affects their development. However social scientists, determining the farmers' socio-economic standing continue to vary taking into account various combinations of variables. The question of which of these are more valid and precisely depicts the SES concept. The study attempted to address this question by employing a systematic review to identify the determinants of SES. A total of 235 studies were taken into consideration after applying the inclusion criteria from the initial 10,780 studies from the literature search. The variables found in at least 20 studies were included. Among the 39 variables identified, the most recurring variables included education, occupation, land holding, income level, housing conditions, and social membership. Irrespective of whether understanding the effect of farmers' SES on their knowledge levels or adoption behavior, these variables were included in SES. These form the basis of the individual's economic position and social standing in relation to others. Individuals' savings, expenditures, investments, and indebtedness though addressing their financial capital situation, were not found to be recurring variables in determining SES. Demographic variables such as family size, marital status, caste/race and type of family are common when determining SES of individuals in society. Variables like livestock status, farm power, extension contact, and mass media participation are exclusive in depicting the SES of individuals engaged in agriculture activities. Overall from the study, it could be understood that the precise concept of SES in agricultural studies was not found. The results can be generalized to Asian and African sub-continent with consideration to the sample studies nonetheless the above-mentioned variables under the social and economic standing of farmers could be adopted by the researchers, and policymakers based on the subjects of interest in studying the SES of farmers.

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