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INTRODUCTION

The adoption of a new currency is not only of deep economic importance but also has profound implications for the social and political dynamics of a country. With very few exceptions, every member state of the

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European Union has undertaken to join a single currency zone and exchange its national currency with the euro. Issues of public support towards the adoption of the euro are crucial for its successful adoption and operation, especially in challenging times (Hobolt & Wratil, 2015). As economic discourse become intertwined with identity politics, public perceptions become more pertinent, and likely, more volatile. It is therefore of significant interest as to what drives perceptions towards euro adoption, what policies could provide best support to the public in order to reach informed opinions. This rings even more true for the next generation of consumers – the European youth, who will experience the euro costs and benefits over the longest period among current generation but are still uninterested in politics and rather not participate in it (Kitanova, 2020). The latter holds particularly true for the emerging economies in the Union (ibid.).

In this respect, Bulgaria is an interesting case in point. The country is a relatively new member state of the EU and has yet to adopt the common European currency amid polarized public discourse. While Bulgaria does have an obligation to join the Eurozone under the Treaty on the Functioning of the European Union contingent upon fulfilling the Maastricht criteria, it has not committed to a specific date. In this way positive public perceptions can seep into politics to accelerate accession-friendly policies, while negative ones may delay adoption and thus lead to foregone economic benefits. Furthermore, research has pointed out that the euro adoption in Bulgaria is marred by significant public beliefs in its negative consequences, that are not grounded in economic fundamentals (Simeonov, 2022; Yotzov, 2023). It is thus of both academic and practical interest to measure the current attitudes of the public towards euro adoption and investigate what are the drivers behind them. Currently, there is limited research on predictors of the attitude towards the euro in Bulgaria. While simple measurements of these abound, they are not put in the context of the institutional environment, personal policy preferences, and behaviors. This holds particularly true for the segment of young people whose behavior and attitudes may diverge significantly from those of older generations. This paper thus tries to fill this gap by investigating what drives attitudes towards the common European currency among the young. We focus on a sample of university students to proxy the young people of the country. While the sample does contain very few more mature participants, it is overwhelmingly very young, with an average age of just 25 years. The survey investigates a set of traditional demographics variables (age, gender, occupation, place of residence, education) as well as more broad behavioral ones such as overall policy preferences (left- to right-leaning), time spent in social networks, consumption of online video content, and overall trust in institutions. We visualize data and test statistically which predictor among those are able to influence perceptions towards the euro. Based on the results, we outline a few policy recommendations.

The paper is structured as follows. The second section contains a review of extant literature. Section three outlines the methodology and data under study, and section four presents the major results. The final fifth section provides a discussion and concludes.
LITERATURE REVIEW

The euro area was created on 1 January 1999 with its first 11 member states, which constitute its core. Nevertheless, these countries introduced physical euro banknotes and coins on 1 January 2002, which was a more significant change for the wider public. In the following two and a half decades the currency union gradually expanded, reaching 20 member-states, with the latest inclusion of Croatia in 2023. The adoption of the euro is a significant change for businesses, the financial system, and the government of any country, and public perception and expectations towards it have been studied in multiple countries that went through the exchange rate regime transition. Moreover, the attitudes towards the possible future changeover have been studied in countries both officially committed to the euro accession, as well as those that have no commitment in this respect.

A major topic around the euro adoption is its effect on inflation and therefore, a majority of the literature is focused on effects on inflation and inflation perceptions and expectations in the context of the euro area accession.

Multiple studies focus on the discrepancy between inflation perceptions and actual inflation found across many countries and largely come to similar conclusions. Álvarez González et al. (2004) studied the relationship between inflation perceptions and actual inflation in the context of Spain’s euro accession. They find that the inflation rate for frequently purchased products is strongly correlated with inflation perceptions, compared to the headline inflation. With the introduction of the euro banknotes, the prices of frequently purchased products increased more significantly in contrast to the stability of the overall inflation index. Similar conclusions are made by Santos et al. (2002) focusing on the same phenomenon in Portugal, and two articles by Walschots (2002) and Buiten (2003) who focus on the Netherlands. Furthermore, Walschots (2002), Buiten (2003), and Pollan (2002) point out that the inflationary processes related to the goods and services that affect consumers’ perceptions the most began in 2001 before the euro changeover and it was coincidental that consumers related the increase in prices with the euro adoption. Kurri (2006) argues that expectations of possible inflationary pressures due to the euro changeover may lead consumers to focus on price increases and ignore price reductions. Gamble (2005) brings up the issue of the euro illusion as consumers tend to look at nominal and not real value so lower nominal prices in euro are perceived as less expensive than higher nominal prices in the less valuable home currency.

Several studies focus on Italy and its experience of the euro area. Giovane and Sabbatini (2008) present a discussion of the divergence between inflation perceptions and actual inflation in the years after Italy’s switch to the euro. They offer three explanations as to why this divergence occurred and in what situations perceptions might be more sensitive: larger price increases for more frequently purchased goods, a change in the distribution of price changes with more outlier increases, and greater differences in the consumption baskets for individuals from various socio-economic backgrounds. Giovane and Sabbatini (2008) also find that there
is a strong relationship between inflation perceptions and individual socio-demographic characteristics, especially gender, education, and personal economic conditions.

Jemec (2010) analyzed the relationship between actual inflation and inflation perceptions across 16 countries, 13 of which adopted the euro during the sample period. The main findings of the study point to exaggerated perceptions of inflation over the past 12 months and expectations for the following 12 months and large gaps between expectations, perceptions, and actual inflation triggered by the euro adoption. Pufnik (2017) studied the effects of the adoption of the euro on consumer prices and inflation perceptions. An analysis was performed on both actual inflation and perceptions in the countries that adopted the euro in January 2002. The study finds that the effect of the euro adoption on the headline HICP is between 0.1 and 0.3 percentage points but despite the modest increases in the actual price level, inflation perceptions grew sharply on average. Lunn and Duffy (2015) point out that there might a significant discrepancy between perceived and actual inflation which they attribute to the perceptual noise consumer may experience.

Zooming out from the topic of inflation expectations and perceptions, Jonung and Conflitti (2008) study general attitudes toward the euro adoption using data from the Flash Eurobarometer survey conducted in September 2006 covering the euro area member states that adopted the euro in 2002. The two survey questions used in the analysis asked if individuals perceived the euro adoption as “advantageous overall” or not and whether it made them “personally feel a little more European than before” or not. On the aggregate level, the authors found that close to a majority perceived the euro as advantageous overall and a fifth of the respondents felt their European identity was strengthened by the euro. Čabelková, Mitsche, and Strielkowski (2015) studied the attitudes towards EU integration and Euro adoption in Czechia. Their main finding is that the attitudes toward EU integration have deteriorated after 2004. A majority of the respondents are unsure about the benefits of the Euro adoption and even regard it as unnecessary and even harmful. Another finding is that the more respondents feel as citizens of the EU and the more they believe in the values of the EU and its ability to enforce them, the more they agree with the idea of EU integration and the Euro adoption.

Genge (2014) studied the Polish opinions on the euro adoption using latent class clustering analysis. The study found that euro supporters were less likely to be concerned by possible price increases. On the contrary, among the euro skeptics, 94% were afraid of price increases. Analyzing demographic variables and their relationship with opinion, the author found that older people were more critical of the euro. Also, individuals with a higher level of education have a strong prior of belonging to the euro supporters’ group. Zimková, Farkašovský, and Szostak (2018) studied how the euro is perceived in both euro-area member-states and non-member-states with respect to the economic performance in the respective country measured against the nominal convergence criteria.

Backé and Beckmann (2020) performed a more general study on the subjective attitudes towards the euro adoption across six EU member-states (Bulgaria, Croatia, Czechia, Hungary, Poland, and Romania) and four potential EU candidates (Albania, Bosnia and Herzegovina, North Macedonia, and Serbia). The authors use
data from the OeNB Euro Survey, which focuses on individual attitudes toward euroization, trust in institutions, monetary expectations, and financial institutions. Exposure to euroization tends to increase the likelihood of more optimistic euro adoption expectations. Similarly, trust in institutions and in the stability of currencies is associated with a higher likelihood of more optimistic euro introduction expectations. The same authors (Backé and Beckmann, 2022) use data from the OeNB Euro Survey to study the relationship between financial literacy and trust in institutions and individual attitudes toward euro adoption. They found that financially literate individuals are more likely to have definite expectations and preferences with respect to the timing of the euro area accession and tend to prefer euro adoption to take place earlier than they expect. Trust in institutions has a similar impact, with trust in both national and supranational institutions being positively associated with forming more realistic expectations and preferences and preferring the euro to be adopted sooner rather than later.

A final strand of research focuses on the association between media coverage and inflation perceptions. Lamla and Lein (2014) leverage a German media dataset to find how media coverage of inflation influences consumer attitudes. They find that, expectedly, the volume of news does impact inflation expectation in line with theoretical predictions. However, it is also the content and tone of content that matters. Biased content and coverage of past inflation in fact bias expectations formation.

Additionally, news on rising inflation have a more pronounced effects than ones about falling prices. Conrad et al. (2022) add further to this, showing that even through consumers do obtain those numbers from the media, their expectations are shaped by their own personal experience. Thus, individual experience is the lens through which agents interpret inflation information, with individuals who have experienced inflation being significantly more likely to expect a price hike. As consumers obtain ever more information from social media, it seems that their online interactions can also carry significant information on how they form price expectations (Angelico et al., 2022).

Finally, microeconomic studies on what drives perceptions of the euro adoption seem to be rarer. In the Bulgarian context general attitudes towards the common European currency are regularly measured but their predictors are insufficiently studied. Still, some authors note that the public tends to be influenced by a set of negative beliefs and concerns that have little economic basis. Simeonov (2022) points out no less than 21 such erroneous beliefs (“myths”) that shape public discourse but notes that current perceptions towards adoption are slightly more positive than negative (46% and 42%, respectively). Yotzov (2023) identifies seven major causes of concern for the general public (monetary sovereignty, inflation, rise in money supply, interest rates, fiscal position, and competitiveness) but the quantitative effect of those concerns on public perceptions is unclear.

When the broader attitudes towards the euro adoption are concerned, the results are much more heterogeneous because both the focus of the studies and the methods employed varied drastically. However, several interesting findings can be mentioned across the various studies. Men are more likely to have a more
positive outlook towards the euro adoption compared to women across multiple euro-area member-states. Individuals with higher financial literacy and stronger trust in institutions are more likely to have a positive outlook across a sample of 10 countries in Central, Eastern, and Southeastern Europe. For the individuals who are skeptical or neutral towards the euro adoption a major concern is the possible inflationary effects of the changeover. Further, the traditional and social media landscapes seem to have a persistent and strong effect on how individuals form their inflation expectations.

**METHODOLOGY**

We conduct an economic survey on a sample of 296 predominantly young consumers and show how their preferences for the adoption of the Euro currency in Bulgaria are modulated by different demographics and behavioral variables. The primary objective of the study is to understand consumer perceptions and behavior in the context of the imminent adoption of the Euro currency in Bulgaria.

**Data Collection**

The dataset resulting from the experiment comprises 296 participants primarily hailing from Sofia University, with various demographic and behavioral variables captured. The average age of respondents is approximately 25 years, ranging from 17 to 78 years. The average respondent falls into the income bracket of 1500-2000 BGN. This underlines that we are studying a sample of predominantly young consumers and thus expect to capture their attitudes. The utilization of an 11-point Likert scale for preference elicitation provides a nuanced understanding of participants’ attitudes and perceptions, contributing to the study’s construct validity. The 11-point scale is selected as it gives more opportunity to capture heterogeneity among agent preferences. This is particularly important as Simeonov (2022) reports that the Bulgarian public is almost equally divided in their preferences when asked a binary question, and thus shorter scales such as the 5-point one may just replicated the division, omit nuance and lead to a loss of potentially valuable information. The collection of a variety of demographic and behavioral variables enables a multifaceted analysis, strengthening the study’s inferential power.

The survey itself was administered in Spring 2023 among Sofia University students in randomly selected courses. This is done to mitigate the issue of selection bias and aims to achieve a representative sample that captures the attitudes of the segment of young and educated consumers. Those may, and probably will, differ for other demographic groups. The survey instrument seems to be tailored to capture various aspects related to the perception of Euro adoption in Bulgaria, including trust in institutions and currency preference. This suggests high content validity. Furthermore, the survey includes both direct and indirect measurements (e.g., perception of Euro adoption and trust in institutions), which can contribute to construct validity.

**Data Quality**
The sample is primarily composed of Sofia University students and is skewed towards younger individuals. This could limit the generalizability of the findings to a broader population. With 296 respondents, the sample size is moderate, which suggests that statistical inference may have to be carried out at the higher end of conventional levels of significance – at or below 10%. While this may be sufficient to analyze the behavioral drivers at large, it might not be large enough for highly granular subgroup analyses. The dataset captures a multitude of variables (see Table 1), both demographic and behavioral, which allows for multifaceted analyses. Given that the survey is designed around a very specific upcoming event (Euro adoption in Bulgaria), the data can provide insights that are highly contextual and therefore valuable for inference. Initial analyses show variations in perceptions and trust levels across different groups, indicating that the data has the potential to reveal meaningful patterns or trends.

This approach to data collection has a number of limitations, and results need to be interpreted with due consideration for those. The sample is not representative for the general public as it is specifically focused on the university populations. In this way it proxies the youngest professionals coming into the labor force. Naturally, there are older students as well and the sample reflects that, but they are a clear minority. Second, survey data represents stated and not revealed preferences. While the revealed preferences may be preferable, those are almost impossible to elicit before actual euro adoption. Third, the sample is moderate in size but not large and thus the sampling error may somewhat skew the results. In summary, while the dataset has some limitations related to generalizability and sample size, its focus on a specific context, as well as its variety of measured variables, suggests that it can be suitable for drawing certain types of inferences, particularly those related to the study’s main focus on the perception of Euro adoption in Bulgaria.

Descriptive Statistics

In the sample under study, we find some mostly positive attitudes towards adoption of the euro currency in Bulgaria. Its mean stands at 0.93 (with -5 being most negative and +5 being most positive) and the distribution of responses is clearly skewed to the right (see Figure 1). In fact, the distribution is characterized by twin peaks – a minority of very negative perceptions and a larger group of very positive ones. The hollowing-out in the middle likely indicates a dwindling group of undecided consumers that have yet to form their opinions. The large standard deviation (s.d. = 3.45) of the variable measuring perception towards euro adoption further emphasized the lack of consensus in this sample of young consumers. This observation underscores the contention that perceptions are not unidirectionally positive but exhibit substantial heterogeneity among respondents. Such dispersion may be reflective of the diverse and often polarized societal opinions on Euro adoption.

The full set of descriptive statistics of the sample under study is presented in Table 1. This is a relatively balanced sample in terms of gender, with females being somewhat overrepresented with almost 60%. The average age of participants stands at 25 years (s.d. = 8.17), but very few are somewhat older.
In terms of where the primary residence of our respondents is, we find out that 32% of them live in a large regional center (9% in the capital), whereas the rest live in a smaller town or village. The average educational attainment stands at 3.45, which roughly corresponds to having or being in the process of obtaining a bachelor’s degree. Most respondents are either working or currently studying, which is to be expected from such a young sample.

Survey participants are heavy users of social media. They spend on average 1-2 hours per day on social networks. About a third of them (31%) spend more than two hours per day on social networks. This behavior seems rather homogenous across the sample, as underscored by the relatively low standard deviation that we observe (standing at s.d. = 0.94), and also by the low skewness and kurtosis of this variable’s distribution.

![Histogram of Perceptions towards Euro Adoption](image)

**Figure 1.** Histogram of Perceptions towards Euro Adoption

*Source: Authors’ illustration*

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
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<td>5</td>
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*Source: Own calculations*
The sample participants are likewise avid consumers of online videos, spending on average between 30 minutes and 1 hour watching video clips on the internet.

Again, a sizable proportion of the respondents (35%) are even more extreme consumers of online video content, spending more than one hour daily watching it. Respondents have a rather liberal outlook on the world preferring market forces to shape society, with their policy stance averaging 3.41 (s.d. = 1.22), where 1 denotes left-leaning policy preferences, while 5 denotes right-leaning preferences. A final insight from the descriptives is contained in the fact that trust in institutions in Bulgaria remains at a low level. Asked for their confidence in the Central Bank and the Ministry of Finance on a Likert scale from – 5 (Very low) to 5 (Very high), respondents give a negative average of -0.53 (s.d. = 2.78).

RESULTS AND DISCUSSION

As a first step towards understanding the drivers behind euro perceptions, we review the correlations between all pertinent features (see Table 2). The highest positive correlation with the attitude variable is the amount of trust respondents place in institutions. The correlation is relatively high with $r = 0.48$, and statistically significant at levels below 1%. This result is large expected and in line with results from the extant literature regarding the importance of institutions (see e.g. Backé and Beckmann, 2020; Backé and Beckmann, 2022). There is also a mid-sized correlation with the amount of social network usage (with $r = 0.15$), which also reaches statistical significance at the 1% level. This positive correlation is not entirely expected, and we hypothesize that its relevance lies in the composition of the sample. While social network usage for the general public may mobilize negative sentiment, it seems that this runs the opposite direction for the younger demographic.

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<td>0.04</td>
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<td>0.06</td>
<td>0.18</td>
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<td>0.01</td>
<td>-0.08</td>
<td>0.05</td>
<td>0.48</td>
<td>1.00</td>
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</tbody>
</table>

Source: Own calculations
Other correlations are smaller in magnitude with education, policy stance and location being statistically significant and of smaller size. On the other hand, there is a very limited association between perceptions towards euro adoption and age, job type, and amount of online videos consumed. While the correlation matrix gives an initial overview of association among variables, a more formal inference procedure is needed to establish firm causal links. We thus regress the variable measuring attitudes towards the adoption of the euro as a national currency on the set of other relevant explanatory variables (see Table 3).

### Table 3. Results of the Multiple Regression Model

<table>
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<tr>
<th>Variable</th>
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<th>Standard Error</th>
<th>T-Statistic</th>
<th>P-value</th>
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<td>0.42</td>
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<td>Social network usage</td>
<td>0.59</td>
<td>0.24</td>
<td>2.44</td>
<td>0.02**</td>
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<td>0.21</td>
<td>-0.71</td>
<td>0.48</td>
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<td>Policy stance</td>
<td>0.31</td>
<td>0.17</td>
<td>1.82</td>
<td>0.07*</td>
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<tr>
<td>Trust in institutions</td>
<td>0.64</td>
<td>0.08</td>
<td>8.40</td>
<td>0.00***</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.321 \] \[ \text{Adj. } R^2 = 0.289 \]

*Source: Own calculations*

*Note: * - significant at 10%, ** - significant at 5%, *** - significant at 1% or below.*

The overall model reaches statistical significance at levels below 1% and has a relatively good fit with \( R^2 = 0.32 \) (Adj. \( R^2 = 0.29 \)). Demographic variables such as age, location, education, and occupation fail to reach statistical significance at conventional levels. This may partly be due to the somewhat limited variance in those variables, and those results need to be interpreted with care. As could be expected from previous research and the correlational structure of the data, the gender variable reaches statistical significance, albeit at the 10% level.

There seems to be a slight bias across genders, with the males being somewhat more positive towards adopting the euro. This is confirmed by looking both at the histogram of perceptions across genders, as well as in the smoothed density functions (see Figure 2). The trends are mainly driven by females giving proportionately more extremely negative responses (at -5), and being only moderately enthusiastic when they are positive. On the other hand, males give proportionately more very positive responses (at 4 and 5). The resulting distributions also show that males have less tendency to register middle-of-the-road opinions than females. The effect is of average size with a beta coefficient of 0.75, meaning that male participants have on average a 0.75 points more positive perception regarding euro adoption in the country.
There is a statistically and practically significant effect of the time spent on social networks on perceptions towards the euro in the sample under study. As we move from one category of usage to another (corresponding roughly to 30 minutes more), the respondents tend to get more positive on the adoption of the euro by an average of 0.59 points on the Likert scale (see also Fig. 3). This result is somewhat surprising as social networks are often associated with disinformation and conspiracy theories, but it seems that the young respondents are more influenced by their consumerist flavor and thus tend to be more favorable towards adopting the currency of countries with relatively higher socio-economic status. Further, it is the people who spend 30 minutes or less on social networks that have given the most negative attitudes ratings in the whole sample (at -5).

Two political attitude variables figure prominently among the drivers of the attitude towards adopting the euro. These are the political stance of the respondent and their trust in the monetary and fiscal authorities. The political stance variable reaches statistical significance at the 10% and approaches the 5% with $p = 0.07$. 

---

Figure 2. Histogram of Perceptions towards Euro Adoption

Source: Authors’ illustration
Its coefficient is of medium size and stands at 0.31, meaning that a person who rates themselves as 1 point more right-leaning will tend to be 0.31 points more positive towards adopting the euro. It is the respondents that have professed a proclivity for left-leaning policies with a focus on social issues that are most negative towards the euro as a new currency (see Figure 4).

The best predictor of attitudes towards euro adoption overall seems to be trust in monetary and fiscal authorities, likely proxying for overall trust in institutions. The coefficient of trust in institutions is highly
significant at a level below 1% with a $p < 0.005$. Its magnitude stands at 0.64, meaning that a 1-point increase on the 11-point Likert scale on trust will increase the positive evaluation of the euro by 0.64 points. This is a robust and quantitatively important effect that remains intact under a wide range of alternative specifications of the regression model. While there are some outliers in the data such as one particularly old participant in the sample, they do not seem to significantly affect the quality of the model or the general trends revealed, as shown in Figure A (see Appendix 2).

As an additional robustness check, a restricted regression is calculated that only includes the variables that were found to be significant at least at the 10% level. Results are presented in Table 4. The variables Gender, Social network usage and Trust in institution remain statistically significant, and their coefficients retain their sign and magnitude. The policy stance variable is significant at the 10% in the full model, while in the restricted model it borders on the 10% significance but does not reach it. At any rate, its coefficient preserves its sign and magnitude. The explanatory power of the two models is also comparable.

Table 4. Results of the Restricted Multiple Regression Model

<table>
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<tr>
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<th>Coefficient</th>
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<th>T-Statistic</th>
<th>P-value</th>
</tr>
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<tr>
<td>(Constant)</td>
<td>-2.33</td>
<td>1.06</td>
<td>-2.20</td>
<td>0.03**</td>
</tr>
<tr>
<td>Gender</td>
<td>0.81</td>
<td>0.42</td>
<td>1.94</td>
<td>0.05**</td>
</tr>
<tr>
<td>Social network usage</td>
<td>0.61</td>
<td>0.21</td>
<td>2.87</td>
<td>0.00***</td>
</tr>
<tr>
<td>Policy stance</td>
<td>0.27</td>
<td>0.17</td>
<td>1.54</td>
<td>0.12</td>
</tr>
<tr>
<td>Trust in institutions</td>
<td>0.61</td>
<td>0.07</td>
<td>8.16</td>
<td>0.00***</td>
</tr>
</tbody>
</table>

| $R^2$                   | 0.283       | Adj. $R^2$     | 0.269       |

Source: Own calculations

Note: * - significant at 10%, ** - significant at 5%, *** - significant at 1% or below.

The model explanatory power is largely driven by a single variable – trust in institutions. Within a simple linear regression with it as the only predictor, we register an adjusted $R^2$ of 0.22. In a similar fashion, the amount of explained variance by the time spent on social networks is found to be around 2% (adjusted $R^2$ of 0.02), while gender and policy each explain less than 1% of the observed variance.

The results obtained fit well with conclusions from other studies in the literature, especially with key insights from the research program of institutional economics. The data from a very specific sample – proxying the (mostly young) university population in Bulgaria – clearly shows that the most important driver for perceptions towards the euro currency is overall trust in institutions. It is an important predictor with quantitatively important magnitude – a three-point increase in the trust in institutions will lead to an almost two-point increase in positive perceptions towards the euro. This result points to the fact any information campaigns on the benefits of the euro should not focus narrowly on the costs and benefits of the currency per se, but also show how the institutional setup and workings would ensure a smooth transition towards a new currency. An increase in the trust in institutions will directly and positively affect the perceptions of the
currency they are introducing. This result is also very much in line with recent insights from Backé and Beckmann (2020, 2022).

A second set of results that shows the importance of the policy stance on euro perceptions fits neatly with Hobolt and Wratil’s (2015) conclusions that part of the attitudes are driven by rational utilitarian cost-benefit analysis of the euro. It is thus hardly surprising that given the expected economic benefits of the euro, pro-market participants approve of the new currency more. This result also underscores a division in Bulgarian society – the traditional left tends to be more social, more nationalist, and less open to further integration in the European Monetary Union. It is therefore likely that more public resources and efforts will have to be expended towards informing social and demographic groups with political views on the left as they will tend to have more entrenched views.

A final point is the surprisingly positive effect of time spent on social networks like Facebook or Instagram. Despite often seeing them as hotbeds of conspiracy theories, it seems that respondents who spend more time in online networks are more positive towards euro adoption. This shows that delivering information materials through online networks can be an effective way of informing the public. Fears that the online environment can be detrimental seem to be disproved by the results at hand. Furthermore, the effects of the social network activity are very strong – in fact, it is the second most important predictor for attitudes towards the common European currency. This conclusion extends naturally the results of Angelico et al. (2022) showing the importance of social media when forming expectations of prices.

CONCLUSIONS
Our results show cautious optimism on the part of university students in Bulgaria regarding the adoption of the euro. Trust in institutions and a pro-market policy stance are conducive to being positive about the introduction of the new currency for the sample under study. The former is clearly a point where monetary and fiscal authorities can focus their attention. Pro-social left policy attitudes are associated with more negative emotions towards the euro. Those sentiments are also important to be acknowledged and addressed as public authorities make an effort to transition from the national currency to the common European one. Such a study is a rare glimpse into drivers of popular perceptions – while surveys are rather common, the elicitation of perception drivers in parts of the Bulgarian population is a markedly new result. These insights may be used as a starting point for formulating policy and targeting communication campaigns towards different segments of the population. Furthermore, the results obtained may serve as an initial stepping stone to understanding how the student populations form their perception of matter pertaining to currency, pricings and financial expectations. These results aim to elucidate both the academic discourse as well as practical policymaking but need to be interpreted with caution given the size and composition of the sample. Further research covering other demographics, additional factors such as exposure to populist and anti-euro media content, and possibly investigating populations in other countries that are to adopt the euro can shed even more light on what
determines the dynamics of attitudes towards adopting a new currency such as the euro. A particularly interesting venue for future research would be a more detailed investigation of consumer perception drivers regarding the adoption of the euro currency with respect to different issues of concern (e.g. the “myths” of Simeonov (2022) or the topics outlined by Yotzov (2023)). Such an approach would possibly disentangle the umbrella measurement of trust in institutions into its component parts – trust in monetary ones and trust in fiscal ones. This will allow understanding of consumer attitude at a much greater level of granularity. At any rate, this paper is merely an initial step towards conceptualizing the nuanced and sophisticated ways in which economic agents approach currency reforms.

Author Contributions:
Conceptualization, All authors; methodology, A.G. and I.A.; software, D.Sh.; validation, A.G. and I.A.; formal analysis, All authors; investigation, All authors; resources, M.Y.; data curation, L.D. and A.K.; writing—original draft preparation, D.Sh., M.Y., R.P.; writing—review and editing, G.M., H.E.; visualization, All authors; supervision, A.G., G.M., H.E.; project administration, A.G.; funding acquisition, All authors.
All authors have read and agreed to the published version of the manuscript.

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Conflict of interests: The authors declare no conflict of interest.

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Appendix 1: Survey Questions and Code Guide

Dear Participant,

You are participating in a survey on the attitudes towards the adoption of the euro as the official currency of the Republic of Bulgaria. Answer the questions honestly. In this way, your position towards the adoption of the euro will be clearly expressed. The survey is anonymous and the data from it will be used only for scientific purposes. It takes about 5-10 minutes to complete.

Thank you for your civic stance!

1. Gender (circle one):
   - Male
   - Female
   - Other

2. Age (in years): ______________ (free text)

3. Main residence for the last 5 years (circle one):
   - Sofia
   - Regional city
   - Smaller city
   - Other

4. Education (circle the highest educational degree obtained):
   - Primary School
   - Middle School
   - High School
   - Higher Education (Bachelor)
   - Higher Education (Master)
   - Higher Education (PhD)
   - Other

5. Main occupation (circle the relevant):
   - High School Student
   - University Student
   - Doctoral student
   - Working in the public sector
   - Working in the private sector
   - Non-governmental organization
   - Retired
   - Other

6. If you are a student, at which university do you study (select one)?
   - SU "St. Kliment Ohridski"
   - Other (please fill in): ______________ (free text)

7. If you are a student, indicate in which faculty is your major (circle all that apply to you)?
   - Faculty of Economics
   - Faculty of Philosophy
   - Faculty of Law
   - Other (please fill in): ______________ (free text)
8. On average, how much time per day did you spend on social networks (Facebook, Instagram, TikTok) in the last week (circle one)?
   - Less than 30 minutes
   - Between 30 minutes and 1 hour
   - Between 1 and 2 hours
   - Over 2 hours

9. On average, how much time per day did you spend watching videos online (eg YouTube, vbox7, etc.) in the last week (circle one)?
   - Less than 15 minutes
   - Between 15 and 30 minutes
   - Between 30 minutes and 1 hour
   - Over 1 hour

10. What type of economic policies do you think should be implemented in the Republic of Bulgaria (circle one)?
    - Left, with a predominantly social orientation
    - More left
    - Centrist
    - More right-wing
    - Right-wing, mainly market-oriented

11. What is your perception of the introduction of the euro as the official currency of the Republic of Bulgaria (circle one number)?
    
    | Number | Rating |
    |--------|--------|
    | Very Negative | -5 |
    | Neutral | 0 |
    | Very Positive | 5 |

12. How high is your trust in the Ministry of Finance and the Bulgarian National Bank (circle one number)?
    
    | Number | Rating |
    |--------|--------|
    | Very Low | -5 |
    | Medium | 0 |
    | Very High | 5 |

**Code Guide**

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<td>13</td>
<td>Likert Scale from -5 to +5</td>
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Appendix 2: Regression Diagnostics

Figure A. Regression Diagnostics Plot: Full Model

Source: Authors’ calculations
ABSTRACT

The main aim of this study is to examine how the demand for and utilization of domestic services is influenced by the social and economic standing of households, as well as the preferred gender of domestic workers hired by employers. The study employed a survey research design. The primary instruments employed for data collection were questionnaire and interview schedule. A total of 294 respondents were deliberately chosen from an unlimited number of houses that employ house aids in Enugu Urban. In order to account for variations in population density throughout the city, Enugu urban was divided into three distinct sections based on population density: low, medium, and high population areas. The acquired data were analyzed through the use of tabular summaries, graphical displays, and calculated percentages. The Pearson chi-square test statistic was employed to evaluate the hypotheses. The findings indicate that the home lifecycle played a significant role in determining the demand for domestic workers in Enugu State, Nigeria. Older and married individuals were more likely to hire domestic staff compared to younger and single individuals. The recruitment of domestic workers in Enugu primarily relied on the endorsement of relatives and informal employment intermediaries. There are no established employment regulations that govern the recruitment of domestic helpers in Enugu, Nigeria. The study concluded by highlighting the crucial role that domestic workers play in bridging the gap caused by the need to balance work and family life. Additionally, it emphasized their contribution to the Gross Domestic Product (GDP) of countries. The report additionally proposed the necessity of implementing effective regulatory policies and laws to improve the sector, given its prevalence of anomalies.

Keywords: Household economy, Law, Gross Domestic Product, House help, Employee, Employer
JEL classification: D15, O011; M38; Z13
Paper type: Case Study

INTRODUCTION

The employment of someone to aid with household chores within one's residence is a prevalent custom in Nigeria and other countries worldwide. Domestic workers offer a variety of services in both rural and urban households and receive compensation in several forms, such as pay, food, housing, or vocational training. There is a need to create an educational, training and information-rich environment that motivates and empowers workers (Ismailov & Krivins, 2023).
Worldwide, the total number of domestic workers stands at almost 76 million, with women comprising 76 percent of this workforce (Florence, Françoise & Joann, 2022). This trend is influenced by many factors, including the increased participation of women in household economic activities (Górka-Chowaniec & Sikora, 2022). The data by WIEGO & ILO indicates that the majority of domestic workers, specifically 82%, are from emerging countries. In contrast, developed countries employ a workforce of 13.4 million individuals. Additionally, 55% of domestic workers are mostly concentrated in two locations globally: East and South-eastern Asia, which accounts for the largest proportion of 36%, followed by Latin America and the Caribbean with 19%. In Africa, it constitutes 1.4% of the entire labour force and 4.9% of the overall number of salaried employees. Chelliah, Boo and Karupiah (2023) noted with keen interest that Italy has one of the highest numbers of domestic workers in Europe and is one of the few countries with a national collective bargaining agreement. Despite these experiences, several vulnerable families and individuals are eager to participate in domestic labour or avail themselves of the services of domestic workers. These are frequently conducted through highly casual agreements. Considering the controversies surrounding domestic employment, it is essential to inquire whether families in Enugu State still employ domestic workers. What is the rationale behind the engagement of domestic workers? What is the process of their recruitment? Which gender is favored and for what reasons? Are there any regulations pertaining to the utilization of domestic workers in Enugu State?

LITERATURE REVIEW
Area of subject matter will be handled under the following themes: a) The reasons responsible for the demand for domestic workers in Enugu State; b) Regulation of the sector.

The reasons responsible for the demand for domestic workers in Enugu State: Many scholars have conducted researches in relation to gender and domestic work Liang and Feng (2023) puts forward a theoretical reflection on consumers–workers under the model of commercialized emotional labor, by noting that the social relations with acquaintances typical in Chinese rural society into the analytical framework. It presents a Chinese model of automatized emotional labor, different from the model of commercialized emotional labor, by analyzing the emotional model acquisition in the professional development process of domestic workers and the mechanisms of formation, maintenance, and reproduction of the model in the labor process.

Numerous households throughout the globe are progressively spending more time away from home due to work or leisure activities while the COVID-19 pandemic also introduced new dimensions to work, e.g. increasingly using catering services outside the home, which are currently treated not only as the satisfaction of basic needs but also of a higher order (opportunity for social meetings) (Górka-Chowaniec, Sikora & Salamaga, 2023). A study by Wang (2023) et al observed that the COVID-19 pandemic resulted in mandatory work-from-home arrangements and the closure of schools and daycare centres, placing an additional burden on families’. In addition, as Niewczas-Dobrowolska et al. point out, the above as well as
other regulations (e.g. commercial) aimed at reducing virus transmission have resulted in changes in their behaviour influenced by various variables, including socio-demographic preferences and attitudes, as well as the specific functioning of the household itself (Niewczas-Dobrowolska, Górka-Chowaniec & Sikora, 2024). Even individuals who are residing at home still desire some type of aid, therefore necessitating the presence of domestic helpers. These occupations encompass cooks, gatekeepers, security personnel, chauffeurs, gardeners, babysitters, and carers for the elderly or disabled individuals, among other roles. Irrespective of the motives for the original involvement, some interactions culminate in mutual remorse. With regard to the role of labor standards in a pandemic, international labour standards are a useful decent work compass in the context of the crisis response to the COVID-19 outbreak. Firstly, respecting key provisions of ILS relating to occupational safety and health, working arrangements, protection of specific categories of workers, nondiscrimination, social security or employment protection (Abuseridze, 2023).

Evidences have shown that due to the long working hours and the need to make more money to take care of the home, spouses are forced to outsource domestic chores which in some instances caused marital conflict with regard to who is to handle what within the home. Cheung and Lui (2023) examines the relationship between domestic outsourcing, housework evaluations, and marital conflict, while also comparing the effects of parents' informal help and paid domestic workers' formal help on marital relations.

Regulation of the sector: Domestic workers have been implicated in certain criminal cases, while others have been subjected to various forms of abuse (Oludayo, 2019). Certain domestic workers have been implicated in crimes such as murder, theft, child molestation, and abuse, either by their employers or other family members, among other wrongdoing.

There is ample evidence of domestic abuse by individuals in various areas of Enugu State, such as Enugu East, Enugu South, and Enugu North Local Government Area. An incident occurred where a woman burned her maid with an electric iron. The State Government, specifically the Ministry of Gender Affairs, had to intervene to rescue the boy involved in this distressing event (Igata & Ozor 2016; Raphael, 2020).

Of course, this problem is typical not only for Africa, but also for other regions of the world - Europe, Asia, North America, South America and Australia. In addition, it should be noted that crime has a significant impact on economic development (Remeikiene et al. 2022). Moreover, the problem also reaches the philosophical level - crime, which is rooted in the structure of society, has a strong impact on the cultural and ideological component of the latter (Kipane et al. 2023). From a legal perspective, an interesting aspect may be the issue of liability in the household sector. For example, if the personnel were provided by a legal entity, the question of applying liability to the board of a company (Teivans-Treinovskis et al. 2022) may arise. In any case, the aspect of crime also requires a criminological dimension, including the study of the criminal’s motivation (Krivins, 2018). Of course, the central theme here will be the development of human resources (Mushkudiani et al. 2020; Chaudhary M., 2021; Górka-Chowaniec, 2017; Di Virgilio et al, 2023).

The absence of regulation in informal work sectors can be attributed to these exploitative practices. Sedacca (2022) also noted that Domestic and family violence (DFV) is a pervasive social problem that social
workers often encounter in practice. In looking at the possible way of curbing these trends among domestic workers and their employers, Passalacqua (2023) examines the process of building an enhanced flagship multi-agency model for policing domestic abuse by embracing the multi-agency risk assessment conference (MARAC) process to curb these abuses. According to the 2010 UN report on migration, there is a positive correlation between the rate of informal work and the prevalence of vulnerable employment among women. Vulnerable labour, as defined by the United Nations, encompasses both self-employed workers and family members who contribute to the workforce. Individuals who are subjected to exploitative labour are less inclined to possess official employment agreements, thereby increasing the likelihood of inadequate working conditions. Domestic items belong to this category.

The WHO 2020 report on domestic workers reveals that around one-third of women globally have encountered instances of physical and/or sexual violence from either an intimate partner or non-partner during their lives. According to a separate research by the Virtual Knowledge Centre to End abuse against Women and Girls (2020), domestic workers are exposed to substantial dangers of abuse and harassment, social isolation, and limited access to safety.

Domestic workers are vulnerable to workplace violence due to a confluence of variables, including the absence of adequate safeguards, discriminatory social norms, and the secrecy of their work environment. According to the International Labour Organization (ILO 2020), studies indicate that domestic workers are susceptible to violence and harassment in the workplace, which includes verbal abuse, insults, threats, sexual harassment, and accusations of theft. Additionally, they may experience inadequate food provision, inhumane living conditions, and excessively long work hours without breaks. The above-mentioned contradicts the ILO’s 1998 Declaration of Fundamental Principles and Rights at Work, which enumerates a short list of core international labor standards. These standards are further defined in eight background covenants incorporated by reference. They include freedom of association and collective bargaining, the elimination of forced labor, the elimination of child labor, and the elimination of discrimination in employment (Abuseridze, 2019). Managing state affairs and advancing economic diplomacy is crucial for diversifying labor and fostering new resources and competition. This leads to better regulation of national labor standards, as evidenced by economic transformations. Additionally, the state must take responsibility for relevant procedures and promote domestic production to secure a niche in the international market (Abuseridze et al., 2022).

METHODOLOGY

The purposive sampling method was used in selecting respondents which ensured that persons selected had domestic staff currently or had at one time engaged the services of domestic staff. The entire urban area was stratified into high population density, medium population density and low population density. Data collection took place October 2021 to November 2023, a period of two years. The long period for data collection is due to the COVID-19 pandemic. The following hypotheses guided the study.
H1: There is a significant relationship between the social/economic status of families and the engagement of the services of domestic workers in Enugu State.

H2: There is gender preference during the engagement of domestic workers in Enugu.

The questionnaire administered consist of the following the questions: 1) Why are the services of domestic workers sought after? 2) What are the processes for the recruitment of domestic workers? 3) How does gender preference impact the engagement of domestic workers? 4) What are the rationales behind the preference for a particular gender?

The data obtained was analyzed using chi-square. The null hypotheses will be tested using the chi-square statistical tool to determine whether they will be accepted or rejected.

\[ X^2 = \sum \frac{(Fo - Fe)^2}{Fe} \]

Where Fo = Observed frequency; Fe = Expected frequency; \( X^2 \) = Chi-square

RESULTS AND DISCUSSION

Figure 1 depicts the distribution of employers by gender. From the figure it is evident that most households who engaged the services of house help are females (70.93%) while the male employers account for 29.07%. Among the employers of house helps females’ house helps were two and half times more numerous than males house helps. The preponderance of females cut across the three population density areas in Enugu urban:

![Figure 1. Distribution of respondents (employers and employees) by Gender](source)

The figure 2 shows the distribution of house help according to their gender; it reveals that 54.86% are predominately female while 45.16% are male. This is a clear indication that the female gender is engaged more by employers than their male counterparts.
Table 1 shows the age distribution of employers in Enugu urban. Age 40 and above account for 58.14% of the employer, unlike those in the age range of 21 to 30 years, demand for domestic help is lower among working mothers between 31 and 50 years owing to the presence of grown-up children who can help with the workload.

These employers constitute families in transition, as they have children who can help take up responsibilities, it was observed that transition age either to retirement or circumstances are more likely to outsource domestic duties, which becomes more complex tasks as the children grow to attend schools while the parents are absent owing to the nature of their work. The need resurfaces as soon as children leave for school or sat up their own family through marriage. The attention of the household is shifted from tendering the baby to nurturing the grown-ups through enrolment in educational institutions. The children do not return home early to perform domestic chores, as they continue with after-school lessons. Hence, the mother returns from work tired and with unfinished domestic chores.

It is further observed that age 20-30 which constitute 39.53% falls under the startup household who are newly married, they would prevent early intrusion in any form either from family members, friends, or
domestic help as they want to enjoy themselves and bond together. But the reality start setting in gradually when the woman becomes pregnant and need to keep up with the space of things because getting pregnant and being employed bring the simultaneous challenges of keeping the home while fulfilling work demands; the ability to perform domestic chores and work effectively becomes problematic.

Table 2. Distribution Respondents by age (employees)

<table>
<thead>
<tr>
<th>Age of house help</th>
<th>Freq.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-15</td>
<td>9</td>
<td>29.03</td>
</tr>
<tr>
<td>16-21</td>
<td>3</td>
<td>9.68</td>
</tr>
<tr>
<td>22-31</td>
<td>18</td>
<td>58.06</td>
</tr>
<tr>
<td>&gt;40</td>
<td>1</td>
<td>3.23</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Hence, the woman who initially considered the presence of a third party in her home as repulsive may have a second thought of employing a domestic help to assist in the house.

Table 2 shows that 29.03% of the house helps are between the age of 10-15 years, this set of house help are engaged by those who need their services. They are rewarded in non-financial ways as some are enrolled in vocational training, enrolled in school or adopt as their own children after some years. The highest age bracket engaged by employers are those between the 22-31 years, they represent 58.06% of the respondents who are within the rage of those either struggling to survive or see themselves through school.

Figure 3. Distribution of Employers of House helps by Occupation

Source: Author’s fieldwork 2022
Figure 3 depicts the distribution of households’ by occupation. 44.19% of Civil servants constituted the highest occupational group among the respondents followed by 25.58% households that engage in business. The least households that engage the services of house helps were found among artisans. It was observed that, the civil/public servant which account for 44.19% and 19.77% respectively engaged the services of house help more due to their non-availability as a result of work schedule and the need to delivery on workload at the office, the civil service typically regimented were civil servant are expected to resume work by 8am and close by 5pm. Those who are attached to ministries, department and agencies providing essential services stay beyond this as the close as late as 1am in the morning, this is seen among those who are attached to the office of the Governor and Office of the Secretary to the State Government (SSG); they are mandated to close when the Governor and the Secretary to the State Government (SSG) is closing. This contributed to engaging the services of house help to bridge the gap of their absent in providing the needed services at home.

The workspace today is quite challenging and demands both genders to put in their best both in terms of energy, talent, and time in bring in the best to achieve desired results or outcomes couple with taking care of one’s immediate home.

The business sector, with 25.58% after civil service sector engage the services of house help. The business sector is driven by profit maximization as such they put in more time and work to ensure that the stay business, the home front is hit by this action which result in the employment of house help in taking care of the home in the absent of the owners. It was further observed that most of these businesses are jointly owned by both husband and wife who are into full time business to provide for the family, this translate into them spending sufficient of their time looking after the business.

<table>
<thead>
<tr>
<th>Principal components/correlation</th>
<th>Number of obs</th>
<th>86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of comp.</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Rotation: (unrotated = principal)</td>
<td>Rho</td>
<td>1.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Eigen value</th>
<th>Difference</th>
<th>Proportion</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp1</td>
<td>2.97835</td>
<td>0.966592</td>
<td>0.4255</td>
<td>0.4255</td>
</tr>
<tr>
<td>Comp2</td>
<td>2.01174</td>
<td>0.67229</td>
<td>0.2874</td>
<td>0.7129</td>
</tr>
<tr>
<td>Comp3</td>
<td>1.33945</td>
<td>0.953058</td>
<td>0.1914</td>
<td>0.9042</td>
</tr>
<tr>
<td>Comp4</td>
<td>0.86396</td>
<td>0.147308</td>
<td>0.0552</td>
<td>0.9594</td>
</tr>
<tr>
<td>Comp5</td>
<td>0.23908</td>
<td>0.207875</td>
<td>0.0342</td>
<td>0.9936</td>
</tr>
<tr>
<td>Comp6</td>
<td>0.03121</td>
<td>0.0174416</td>
<td>0.0045</td>
<td>0.9980</td>
</tr>
<tr>
<td>Comp7</td>
<td>0.01377</td>
<td></td>
<td>0.0020</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variabl</th>
<th>Comp1</th>
<th>Comp2</th>
<th>Comp3</th>
<th>Comp4</th>
<th>Comp5</th>
<th>Comp6</th>
<th>Comp7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexplained</td>
<td>0.4142</td>
<td>0.1551</td>
<td>-0.3932</td>
<td>0.7709</td>
<td>0.1084</td>
<td>0.1591</td>
<td>-0.1355</td>
</tr>
</tbody>
</table>

sufficient-
Table 3 reveals the output level of principal component analysis depicting the reasons or factors responsible for the demand for domestic workers in Enugu State. Across the indicators, the proportion index of those who indicated that households with no sufficient time to attend to domestic chores represented by (sufficient time) were at 0.4255 which account for 43 percent. While the proportion index responses on reason that house helps are required because they do not have the strength to cope with all the demands of home was at 0.2874 which account for 29 per cent represented by (no strength). The proportion index of those who felt that there was need to engage help in taking care of family members that need extra care especially the aged was at 0.1914 which account for 19 percent represented by (assist Fam) that account for the major reasons.

Whereas other reason which have low weighted responses includes, the need to reduce work load on kids (reduce Wk) with a proportion of 0.0552 which account for 5.5 percent, the kids are unavailable for house chores due to school and lesson engagement (kidsUnavilable) with a proportion index of 0.0342 which account for 3.4 percent, the need for companionship among kids(need Companio) with a proportion index of 0.0045 which is at 0.5 per cent and need to help aged parents(aged parents) with a proportion index of 0.0020 which is at 0.2 percent.

Hence, among the factored indicators, proportion index of those who indicated that households with no sufficient time to attend to domestic chores represented by (sufficient time), proportion index of households with no sufficient time to attend to domestic chores represented by (sufficient time) and proportion index of those who felt that there was need to engage helps in taking care of family members that need extra care especially the aged were the highly weighted reasons across households respondents in Enugu.

Table 4. How Domestic workers are being recruited across Respondent

<table>
<thead>
<tr>
<th>location of respondent</th>
<th>How was the house help recruited</th>
<th>location of</th>
<th>house help enagement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>direct</td>
<td>agent</td>
<td>family member</td>
</tr>
<tr>
<td>abakpa</td>
<td>0</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>obiagu</td>
<td>32</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 4 depicts how domestic house helps are recruited across the three studied locations among the households and house helps in Enugu. Interestingly, households’ respondent in Obiagu recruit house helps directly which account for 76.2 per cent and through family members which also account for 23.8 per cent respectively. Whereas, in the independence layout direct recruitment is at 56.5 percent, through an agent at 39.1 percent and through family members at 4.4 percent.

According to house helps responses for those in Abakpa, agent account for 84.6 percent, family members at 7.7 percent, and friends at 7.7 per cent. Followed by those in Obiagu where agent accounts for 90.9 percent, and family members at 9.1 percent. Whereas, for those in dependence layout, agent is at 71.4 percent, family members at 14.3 percent and friends at 14.3 percent as well.

<table>
<thead>
<tr>
<th></th>
<th>dependence layout</th>
<th></th>
<th>independence layout</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td>9</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>56.52</td>
<td>39.13</td>
<td>4.35</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>9</td>
<td>31</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>52.94</td>
<td>10.59</td>
<td>36.47</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Figure 4.** House helps Recruitment across gender respondent in Enugu (in %)

*Source:* Author’s fieldwork 2023
Figure 4 depicts the distribution of house helps recruitment across gender. Among the respondents, most of the recruitment is done directly for female respondent as this account for 51 percent, agent at 15 percent and family members at 34 percent. Across the male respondents, similarly, house helps recruitment is done directly which account for 58 percent, and through family members at 42 percent. This agrees with existing literatures that most house helps recruitment are through direct contact as most family are likely to give out through kids for house helps to close people that they have direct contact with for safety purposes in Enugu.

Table 5 depicts the level of gender preferences in services of domestic house helps across the studied locations in Enugu. Among respondents in Abakpa, about 4.8 percent are indifferent to gender preference, 47.6 per cent had gender preference based on the choice of work designed for them to do while 47.6 had no choice for gender preference. However, in Obiagu, 76.2 percent are indifferent with no gender presence, whereas, 23.8 percent have gender preference based on the choice of work designed for them to do.

### Table 5. Gender Preference in Services of Domestic Workers in Enugu state

<table>
<thead>
<tr>
<th>Respondents</th>
<th>reason for gender selection</th>
<th>gender of respondent</th>
<th>reason for gender selection</th>
<th>gender of respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>non choice</td>
<td>had no ch</td>
<td>Total</td>
<td>non choice</td>
</tr>
<tr>
<td>Abakpa</td>
<td>1 10 10</td>
<td>21</td>
<td>4.76 47.62 47.62</td>
<td>100.00</td>
</tr>
<tr>
<td>Obiagu</td>
<td>32 10 0</td>
<td>42</td>
<td>76.19 23.81 0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Independence layout</td>
<td>13 10 0</td>
<td>23</td>
<td>56.52 43.48 0.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>46 30 10</td>
<td>86</td>
<td>53.49 34.88 11.63</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Similarly, for households in independence layout, 56.5 are indifferent, 43.5 percent have gender preference based on the choice of work.

While, across gender, 50.8 percent of female are different while 49.2 percent of female have gender preference based on the choice of work whereas, about 60 percent of male respondent are indifferent to gender preferences in house helps choice whereas 40 percent have no choice in gender preference.
Table 6. Hypotheses Result

Enumerating sample-space combinations:
- stage 3: enumerations = 1
- stage 2: enumerations = 66
- stage 1: enumerations = 0

<table>
<thead>
<tr>
<th>Location of</th>
<th>Reason for gender selection</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent</td>
<td>Non choice base had no ch</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>abakpa</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>chi2</td>
<td>9.3</td>
</tr>
<tr>
<td></td>
<td>LR chi2</td>
<td>-4.8</td>
</tr>
<tr>
<td></td>
<td>obiagu</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>chi2</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>LR chi2</td>
<td>22.6</td>
</tr>
<tr>
<td></td>
<td>independence layout</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>ch2</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>LR chi2</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>chi2</td>
<td>13.4</td>
</tr>
<tr>
<td></td>
<td>LR chi2</td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td>Pearson chi2(4) = 47.3004Pr = 0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likelihood ratio chi2(4) = 50.4248 Pr =0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cramér's V = 0.5244gamma=</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kendall's tau-b = -0.3985ASE = 0.094</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fisher's exact = 0.000</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 depict the hypothesis test output that; there is no significant difference in the level of gender preferences in services of domestic house helps across the studied locations in Enugu; It is therefore, found that the null hypothesis is rejected hence; the conclusion is that there is significant difference in the level of gender preferences in services of domestic house helps across the studied locations in Enugu based on the Pearson chi2 statistical significance at the probability level that is less than 0.005. Secondly, the life cycle, social/ economic status of families contributes greatly to the engagement of domestic workers.

CONCLUSIONS
The contributions of domestic workers in providing complementary services in bridging the gap in homes regarding chores, care and home management are still very important despite the automation of some chores at home. A lot of factors have propelled the demand for these services ranging from caring for the aged ones, reducing the workload of little kids, the need for companionship for aged ones and households not having sufficient time to attend to house chores. They are sourced either directly or through family members and agents.
It was discovered that the domestic help sector in Enugu is predominantly staffed by women, who constitute 60-70% of the labour force. The prevalence and favoritism towards females as domestic aides was shown to be correlated with the specific tasks they are expected to perform. The hypotheses were evaluated using the Pearson chi square statistical tool. The hypotheses were confirmed as there is a notable correlation between the life cycle, social/economic status of families, and the utilization of domestic workers’ services in Enugu State. The income of households plays a crucial role in the hiring and payment of house help. The second hypothesis was also confirmed based on the observation that there is a gender bias in the recruitment of domestic workers in Enugu, which can be attributed to the specific requirements of the job.

The study recommends the following measures: Firstly, there is a need for the proper regulation of the sector and other critical stakeholders, both the recruiting agents and employers. This is to help curb the challenges faced by both the employer and employee. Secondly, there is a need for Government, private individuals, and civil society organizations to collaborate to make enabling laws that guide the engagements, rewards, and smooth operation of this sector to avoid abuses and exploitations.

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BUSINESS APPROACHES PATHWAYS TOWARDS STRATEGIC MARKET CAPTURE IN TELECOMMUNICATION INDUSTRY

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ABSTRACT: Telecommunication business companies face many sustainability challenges that range from rapidly evolving technological and infrastructural changes to increase in the demands of potential customers or clients. While telecommunication business companies’ investment varies in terms of products and services, their focus on market also varies accordingly. However, the rapidly changing market due to technology evolution and customer demands bring in a lot more challenges than the ones which can be anticipated. Business sustainability in Telecommunication company’s business strategies vary according to the business model they use which influences on their focus on various business opportunities. Each competitor has different tactics to use when it comes to gaining the sustainable market share and generation of good revenue. Due to rapidly evolving nature of telecommunication industry, the telecommunication companies require regular assessment and improvement of their business focus. A thorough investigation and analysis of selected telecommunication business companies have been presented that focuses on highlighting the strengths and weaknesses of telecommunication companies with respect to conducting successful business and sustainable market capture strategies while carefully outlining the business model components that play crucial part in achieving it. Detailed evaluation of their focus on various business model canvas components and individual entities have also been presented to outline the importance of incorporating certain entities within the business model to target success. Impact of these strategies, 5G technology, its demands and promises have also been discussed to provide an insight into the need for improvement of business models for sustainable growth within telecommunication business sector.

Keywords: Telecommunication Business Industry; Mobile Communication; Business Model Canvas; Marketing and Management

JEL classification: M1, M20, M30
Paper type: Research article.

INTRODUCTION

Telecommunication sector faces a number of challenges which can also be considered as opportunities for the rapid growth or improvement of the same. Telecommunication has also served as a platform for a vast number of digital innovations, possible solutions and their testing platform (Elibal & Özceylan, 2021; Sanchez-Segura et al, 2021). Promising investment opportunities can also be foreseen. Timely adaptation of new demands of the market and conditions is necessary for sustainable business in this sector and companies that can change their approach to business accordingly are witnessing significant success in the market (Wang et al., 2021;
Canestrino et al., 2019). Due to the increase in the consumer demands and types Telecos have starting to prefer more integrated as well as hybrid models for business.

A number of companies or organizations use corporate business models and often share businesses among the top management, partners and/or stake holders (Raimi et al., 2022; Sajadieh et al., 2021). These organizations use different business models from those of their subsidiaries. The success stories of these businesses depend up on their relationships and market capture. On the other hand, customer expectations and their behaviour towards specific products also play vital role in success of a business and these behaviours and expectations may change rapidly resulting in rapid growth or rapid failure of the business. A number of options or solutions have been suggested by the researchers globally to overcome the rapid changing expectations by adapting the on-demand service model to survive the challenges.

The companies have been using various tactics to handle the pressure of competition by asking the Over the top (OTT)s to pay for the usage of the network or for business to make use of cloud environments but have been left behind while some of the competitors could gain a regulation in favour (Terho et al., 2023; Bhatia, 2022; Susanty et al., 2022). On the other hand, to survive the competition in real world the telecommunication business companies not only need to work on improving its productivity margins but increase the infrastructure performance (Figure 1). It can be done via integration of multiple platforms and using different technologies that suits the economical structure of the company (Ferraz et al., 2023; Fried & Lakomaa, 2022; Najm & Ali, 2022). Moreover, the company needs to focus on the organization of its business to be able to grow and provide services that can be used as an advantage against its competitors.

![Figure 1. Challenges faced by the telecommunication business companies](image)

*Source: Author's own elaboration*

However, there is cost associated with everything. New skills need to be incorporated to speed up and to be able to meet the new challenges and create new opportunities for the business and its sustainable survival.
in the competitive market. Hence, innovation will have to be supported and trainings will be required for the workforce thus changing the focus of the management to an entirely new region for prosperous business (figure 2). It is important to understand the key areas a company deals, considers or focuses on. Business model canvas can help identify these important components.

![Figure 2. Business Model Canvas, organization and Market – Framework for a better business](source: Author's own elaboration)

This paper/research has made a substantial and novel contribution by providing an in-depth analysis of the business in the telecommunication sector for companies via considering and evaluating strategical, managerial as well as financial perspectives to help understand strengths, weakness, major drawbacks and possible future perspective for business growth and market sustainability.

![Figure 3. Research Methodology](source: Author's own elaboration)

Perceptive and predictive analysis have been used for the managerial and marketing strategies, setbacks, and descriptive/statistical analysis for the financial data of the organizations. Figure 3 illustrates the research
contribution and study path. An open-ended approach is opted to explore the business strategies via documentary analysis using the documents/reports from each company as well as from related articles on the global research forum.

Although, business model canvas plays vital role in creation and successful execution of a business model, major factors and key attributes associated with Business Model Canvas (BMC) as often ignored in a business model of a telecommunication company. To the best of our knowledge, this perspective and this analysis has not been conducted on the telecommunication companies under consideration. Rest of the paper has been formatted as follows. BMC and its components have been discussed in Section 2. Section 3 contains in-depth discussion regarding the three successful Telecos and their business models based on the BMC components. Section 4 is dedicated to results and discussion containing analysis and evaluation of the perspective of business and its focus that can lead to conducting successful business in the telecommunication industry by the three Telecos. Section 5 provides some open research issues and possible paths to help design an optimized business model for telecommunication business companies. Section 7 presents conclusion of the research.

2. Business Model Canvas

Basic as well as significant components of a business can be identified using a Business Model Canvas as it also provides an understanding about the company's business model (Athanasopoulou & De Reuver, 2020; Ghazi et al., 2019). Distribution of the key elements by the BMC helps cope with the market competition as those elements play a vital role in running a smooth business. It also helps in focusing on the key areas to make a significant place in the market, surrounded by competitors. Hence the BMC actually guides the company regarding customers they serve, using which channels the value proposition may be provided to the customers and under severe competition in the market the market share may be acquired and shared by the company.

The BMC may help in understanding the competitor's business model too. BMC presented by A. Osterwalder and Pigneur (2011) has been considered in this paper to provide an analysis and evaluation of the business models of three telecommunication companies; NTT Docomo, China Mobile and AT&T. The considered BMC consists of nine components (figure 4) that a good business model may require for a successful business of a company. These include Key Activities, Key Resources, Key Partnerships, Value Propositions, Customer Relationships, Distribution Channels, Customer Segments, Cost Structure and Revenue Streams.

Each of the components is analyzed and discussed individually to highlight the strengths and weaknesses of each company with respect to running a business successfully. Every single component plays a vital role in understanding a business model closely and efficiently by a company. It is important to know how these BMC components influence in the success of a company while using a business model. In this paper, with the help of the BMC, business models of NTT Docomo, China Mobile and AT&T have been taken into consideration to provide a detailed analysis as well as an insight into the strengths and weaknesses of these business models with respect to doing successful business.
A detailed discussion is presented in the next section.

3. Telecom Business Components

Telecommunication technology is evolving rapidly and so are the demands of a user. For any telecommunication business company, to sustainably conduct a successful business, it is important to acquire deep understanding of various aspects of the telecom business requirements from as wider perspective as possible (Kurniawan et al., 2018). In this section, a detailed analysis of business models of three telecommunication companies; AT&T (AT&T online) NTT Docomo (NTT online) and China Mobile (China mobile online) is provided with the help of BMC components to highlight the strengths and weaknesses of those business models and to provide an insight into the future challenges associated with evolving telecommunication technologies. Nevertheless, this analysis will also help with understanding the current and future challenges associated with the business conducted by the telecommunication business companies. The BMC components are discussed below in detail.

3.1. Key Activities
This component focuses on the company's basic operations with respect to what is done and how it should be done. For the analysis, a tabular comparison is presented for the key activities component which includes 32 elements. Table 1 below shows the detailed comparison.

Table 1. Business Model Components - Key Activities

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cell Phones/Handsets</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>DSL</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Internet</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Microcell</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Landline Phones</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Hosting</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Marketing</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Engineering</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Network Development and Maintenance</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Network Operation</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Customer Service and Support</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Technical Support</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>IPTV</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Uverse</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Sales Channels</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billing Plans</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Dmarket</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance/payments</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Docomo ID</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overseas Business</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Customers</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2M</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reputation and Brand</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Alliances</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARPU (Average revenue per user)</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Business Area</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Number of Subscriptions</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Source: Author's own elaboration
Out of the 32 elements there are 13 elements that are focused by all three telecommunication companies. China Mobile and AT&T also focus on two other elements marketing and Engineering. The business models of the telecommunication companies in the telecommunication sector may not have a huge difference in their business models however selection of BMC components and focusing respective elements may play a big role in capturing a market share. This comparison provides an insight into the selection of the focus on various elements in the key activities component and how these elements may be important for successful business of that company.

As illustrated in the Table 1, NTT Docomo's business model focuses on 7 more key activities that include Docomo ID, Healthcare, M2M, Capital Expenditure, Reputation and Brand, Corporate Customers and Average Revenue Per User (ARPU). Docomo ID has been developed as a framework that plays a vital role in the upper-layer service distribution which results in an increase in smart ARPU and the company can prosper in new business areas by generating more revenue. It also helps facilitate its customers by providing various authenticated actions that require individual ID verification such as one-click payments, mobile sites single sign-on, etc. The company also provides "four freedom" concept realization to its customers that includes OS-free, device-free, network-free and carrier-free. This element helps attracting more users/customers hence results in generating or increasing revenue of the company.

NTT Docomo has focused the most elements in the key activities component. It is important to understand the role of these elements for the successful business and market capture. While, it is not easy for any company to incorporate all these elements in its business model, including or focusing the majority of these plays an important role in the overall success of a business model canvas component to conduct successful business. However, with the changing demands of the market, survival of business may become an issue if "partnership" is not considered.

3.2. Key Partnerships

Nowadays, it may be difficult to do business without third party organizations whose services may boost the company's overall performance and revenue generation. This BMC component defines and details the services needed for market survival and how the third parties can be included in the business plan. Different projects, organizations or enterprises may be identified as partners using this component.

AT&T and NTT Docomo focus on all the elements of this BMC component but one that is Chinese Government. Table 2 illustrates that China Mobile is the only company that has the focus on this element hence covering all the considered elements of the "key partnership" component. This unique partnership of China Mobile supports the company in the Chinese Telecommunication Industry. It helps the company with the regulations, control, rules and security aspect. Nevertheless, it can also track payments, individuals and record the services consumed by the individual users that may help the company in better understanding of the potential business areas and boost the market capture.
On the other hand, this partnership may also have some negative aspect associated with it. This partnership may affect international business of the company and the company may also have certain restrictions while dealing with international clients who may not like Chinese Government interference or hurdles. Business with international individuals or organizations may involve different approach, initiatives, services and rules. Here, being a partner, the government may restrict certain plans and services which may result in a decline in the overall market share, revenue generation or customer attraction and subscriptions. Majority of telecommunication business companies avoid partnership with the government as it mostly leads to hurdles, interferences and creates obstacles in doing successful business. Whereas, NTT Docomo and AT&T, being private companies, following rules and regulations, do not face any such interferences and can do business with international clients and organizations without hurdles. Moreover, it is also important to make sure right product and/or services reach the customer for a successful business.

3.3. Value Proposition

Value Proposition is the component that involves everything associated with providing high quality product and valued services to the customers that also helps in attracting more customers. The company via value proposition guarantees its customers that the products and services provided to them are high quality as compared to those offered by its competitors. Hence, this component provides a list of valued services, what tasks, actions and/or operations are done for the customers what has been promised and what and how it is provided. The table 3 below lists the elements of the value proposition component of BMC and provides a comparison among NTT Docomo, AT&T and China Mobile.
Table 3. Business Model Components – Value Proposition

<table>
<thead>
<tr>
<th>Value Proposition</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed Network</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Improve Efficiency</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Growth Revenue</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Full-service telecommunications services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Telecom services to interconnect the Chinese society</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business primarily consist of mobile voice and data business</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IoT Business</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mobile payment service</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wireline broadband and other information and communications services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Entertainment applications</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Quality and reliability of its network services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Brand standing and reputation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Commitment to R &amp; D</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Accessibility of its multi-channel services</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patents</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Provide up to date solutions to its customers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Source: Author's own elaboration

China Mobile solely focuses on providing telecommunication services to the Chinese society and promises to interconnect them together. It promises all but one key elements of the values proposition component which is providing accessibility of its multi-channel services to the customers. Similarly, AT&T while promising majority of the key products and services to its customers does not provide telecommunication services to Chinese society and its customers have no accessibility to its multi-channel services. On the other hand, although NTT Docomo does not provide telecommunication services to Chinese society, it guarantees accessibility of its multi-channel services to its customers; local and international. Providing its customers with the accessibility to multichannel services works as a game changer for NTT Docomo.

Accessibility to multichannel services include customer support via a number of platforms hence this can facilitate the customer beyond satisfaction and can potentially be self-help support service. This kind of service may help the company in reducing its overall business cost and may also help in saving without having to compromise on what it offers. The services in this element need proper implementation to guarantee customer self-satisfaction. This allows the customers to connect with the company regardless of their demography using any platform convenient and comfortable to them. This helps in boosting business among loyal customers and
gaining trust in new ones due to delivering high quality and well managed services across a wider range of platforms. This also helps in boosting the revenue as more subscriptions may be obtained quickly. Nevertheless, Customer Relationship also plays a vital role in doing successful business in the telecommunication industry.

3.4. Client/Customer Relationship

This BMC component has an important role with respect to not only creating strong ties with the customers but also retaining them. Therefore loyalty is gradually established via building good relationship among the service provider and the customer. Revenue earned by a business can directly be affected by the client/customer relationship. While a good relationship guarantees loyalty and business growth, a weak relationship may result vice versa. This makes it important for the company to provide timely response and fulfilled the desired demand of the customer as much as possible for a successful business. The table 4 below summarizes the type of services the three tech giants focus. This focus on these elements helps provide, construct and consult better and targeted services for the customers/clients.

<table>
<thead>
<tr>
<th>Table 4. Business Model Components – Client/Customer Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer/Client Relationship</td>
</tr>
<tr>
<td>Rollovers and promotions</td>
</tr>
<tr>
<td>Free upgrades</td>
</tr>
<tr>
<td>Consult and build better system for clients</td>
</tr>
<tr>
<td>Service for targeted customers</td>
</tr>
<tr>
<td>Self-service basis</td>
</tr>
<tr>
<td>DoComo shop</td>
</tr>
<tr>
<td>Dmarket portal</td>
</tr>
<tr>
<td>Mobile network subscription (MNS)</td>
</tr>
</tbody>
</table>

Source: Author's own elaboration

AT&T provides rollovers and promotions and free upgrades to its customers that help them receive free mobile and services. This may help the company in capturing interest of the customers with respect to retaining and/or finding customers and market share. However, NTT Docomo focuses on a few more elements for good business that are currently ignored by the China Mobile and AT&T. These include Self-service basis, Docomo Shop, DMarket portal, and Mobile Network Subscriptions (MNS). Hence, it provides more services as compared to customer consultation based for sales and after-sales. Docomo shop helps in strengthening the customer trust and loyalty due to the customer service capabilities that is directly and indirectly influential for the customer satisfaction. Customer service times have been affected due to a number of reasons and require proper management. NTT Docomo provides online service guidance and with the help of tablet usage these service times are adequately managed by the company. It is important to ensure that the customer does not have to wait which reflects in creation of loyal customers hence grater revenue may be earned. D Market helps
customers find what matches their tastes, life style and convenience. NTT Docomo via DMarket provides user-friendly, convenient and every-day used service to help its customers with their daily life. These services are not only offered to their existing customers but also to non-subscribed users. These initiatives have helped the company in achieving breadth and depth; expanding the number of stores and increasing the offered services and products. Nevertheless, the overall revenue generation by the NTT Docomo has massively increased as compared to that of its competitors. It is however equally important to identify the customers their demands and/or their needs to provide targeted products and/or services hence focus on better revenue generation.

3.5. Customer Segments

In this component the company actually group the customers/clients based on certain similarities in demand, usage, locality, etc. to enlist the sectors that help in generating large portion of the company's revenue. These groups help company understand their needs and/or demands and to provide targeted services and products to that group appropriately and effectively. This also helps company in conducting targeted marketing of the products and services. The table 5 below illustrates the elements of the customer segments component focused by AT&T, NTT Docomo and China Mobile.

<table>
<thead>
<tr>
<th>Customer Segment</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>All generations</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Small business</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Government</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Family and individuals</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Massive market</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Home users</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Customer base</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author's own elaboration

The Table 5 shows all the companies focus majority of the elements to make sure they acquire a good market share and capture more customers. However, customer base is solely focused by NTT Docomo which helps the company in developing opportunities for new business. This also helps in securing partners for device development and services hence showing path to new business opportunities. Customer base in NTT Docomo and its operational scale is the foundation of the business model of the company, the number of users and/or subscribers X Average Revenue Per User (ARPU), the customer base maintenance and expansion is a challenge in the company's growth strategy. Simultaneously, the company's customer base also characterizes a large segment of potential customers. In the size of this segment lies the key strength of the NTT Docomo's efforts to acquire trusted partners in terms of communication services, product and application developers, manufacturers and alliances. Hence on a wider perspective, new business opportunities means more business hence more revenue which may help and provide an edge in capturing market share as compared to that of the
3.6. Key Resources

For a business model to work, key resources play a vital role. These are the assets that are needed by every business model. Value propositions are generated through them as well as company's revenue. These resources are owned, leased or both by a company. The company's business model indicates the type and the amount of resources that are utilized or being utilized by a company. These can not only indicate the type and number of activities a company is involved in but their quality also impacts on the company's productivity and sustainability. Hence in the business spectrum this component defines type of material, equipment, staff, etc, needed at the operational end. Hence for a specific customer segment, it plays an important role to indicate the minimum delivery needed by the company for that targeted set of customers to generate revenue and guarantee value proposition. The table 6 below illustrates the elements focused by the companies.

<table>
<thead>
<tr>
<th>Key Resources</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support from Chinese government</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IoT industry ecology</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>NFC</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Market oriented mechanism</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lean organization structure and process standardization</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Voice –over LTE (VoLTE)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Mobile broadband network</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Sales and distribution channels</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Chain of retail stores</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>More Patents for LTE</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

*Source: Author's own elaboration*

The table shows that all three companies try to focus on the majority of the elements of the key resources component. However, China Mobile is the only one that is supported by the Chinese Government hence may have advantages and disadvantages associated to its products and services due to this support. With the support from Chinese Government, the company can provide services and coverage to Chinese Communities in all parts of China hence has an edge over generation of revenue as compared to its competitors. Majority of the telecommunication business companies avoid governmental interferences and receiving business directives as these result in certain possible restriction and may not be able to operate business freely. This can be disadvantageous in terms of acquiring market share due to tough business competition. AT&T and NTT DoComo do not face such intervention hence can offer wide variety of products and services to their competitors, fast. Nevertheless, it is important to highlight the company's key resources as those are the most important assets for a company to conduct successful business using a business model.
customers/clients. It is equally important how to time and locate the appropriate launch of products and services by a telecommunication company for good business.

3.7. Distribution Channels
The BMC component distribution channels outlines the directions or paths that must be used for a successful delivery of products and/or services by the company to customers/clients at a specific place on a specific time. These channels play vital role in the business growth of a company. These channels or routes can be as short as direct dealing between the company and the customer/client or they may involve multiple intermediate routes to reach a customer, such as via distributors, wholesalers, retailers, etc. The companies under consideration also use multiple channels to reach their customers as illustrated in the table 7 below.

<table>
<thead>
<tr>
<th>Distribution Channels</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertisement</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Retail channels</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Robust sales portal</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wide range of solutions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Company owned stores</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Customer services hotlines</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Virtual outlets</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Weixin (WeChat)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Website</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online store/DoCoMo Shop</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online entertainment/ Dmarket can be accessed through APP/mobile &amp; desktop browsers</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author's own elaboration

China Mobile solely uses Weixin (WeChat) application for a large number of purposes that include messaging, mobile payments, social media, etc. The app has been developed by Tencent. It is widely popular among Chinese Communities as many of its services have limited geographical use that is only in China. Where AT&T focuses most of the elements of the component, NTT Docomo provide more services to its customers via focusing on virtual platforms that include online stores, online entertainment, DMarket and Docomo Shop. The customers/clients can access DMarket via Desktop Browsers, Mobile Browsers and Mobile Application. Hence, NTT Docomo provides quick and effective services to its users which may result in boosting its business as compared to its competitors. One click access to services and products make it convenient for NTT Docomo's customers to access its services and products easily and efficiently in their busy
life. Moreover, a successful company needs to outline its cost and expenditure so that its business model can work. The next BMC component "cost structures" outlines the importance of the same.

### 3.8. Cost Structure

For a business model to work, it is important to outline all the costs that are incurred by the company. This component describes these costs. Nevertheless, the estimation or description of these costs becomes relatively easier once the following components have been defined; key activities, key resources, as well as key partnerships. Every business model’s aim is to try to minimize the costs however in telecommunication industry a low-cost structure is very important. For a company, these cost structures define certain costs that the company will earn conducting business using a specific business model to manufacture and deliver the company’s value proposition. Every operation in business has cost associated with it for example maintaining customer relationship; costs associated with this operation are distributed across all products and/or services offered to customers/clients to minimize the overall costs. Moreover, the cost structure component helps in characterization of two large business model classes; cost-driven and value-driven. While the former tries to minimize expenses or costs, the latter targets revenue generation via services and/or high quality offers. Table 8 outlines the elements focused by the three telecommunication companies with respect to the component cost structure.

All the three companies focus on the majority of the elements important for a successful business. However, AT&T focuses two more elements that help in better cost evaluation and estimation of the overall cost associated with the business. AT&T focuses on the elements payroll of employees and attorneys and acquisition of the other companies. The term acquisition is used when a company is a partial or major share holder of another company or its assets.

![Table 8. Business Model Components – Cost Structure](image)

<table>
<thead>
<tr>
<th>Cost Structure</th>
<th>NTT DoCoMo</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D activities</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sales &amp; Distribution networks</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Maintenance &amp; Development IT infrastructure</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>and commercial infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retention of its personnel</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Salaries and benefits</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Network of sales and administrative offices</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Chain of retail stores (rent and utilities)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Acquisition of the other companies</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payroll of employees, attorneys and all</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Operative cost</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
New products can be developed, newer and better resource accessibility, as well as talented human resources are a few more to name that the buyer company may profit from. Moreover, an acquisition of a company results in opening doors to new market immediately that too with a trusted reputation, recognized brand and existing loyal customers/clients. AT&T has an edge in the competition with respect to cost evaluation and overall business cost estimation. Boosting business also means focusing one of the major goals of any telecommunication business company that is revenue generation. The component revenue structure details cash generated via various revenue streams.

### 3.9. Revenue Streams

This BMC Component focus on what revenue a company earns from the company's individual customer segments. It actually represents the money that is generated by every single customer segment of the company and its profit. This cash is usually estimated or calculated by subtracting costs from the total revenue generated by the customer segments. This component serves as a key component for the business models that are customer-focused. Hence for successful generation of company's revenue streams, customer-centric approach plays a vital role. In other words, it is important to consider a value or an estimation of it that the customer or client may be willing to pay for hence fairly pricing the products or services based on the approximated worth. The income can be generated from two types of revenue streams; transaction based and recurring based. The first is associated with the money generated from customer's on-time payment for the products or services whilst the latter is related to continuous payments made by customer which may involve post-purchase-customer-care or for service plan or value proposition. Businesses mostly focus on customer policies either leading to business models with incomplete structure for revenue streams or completely ignoring them. It is vital for a business to identify this component as cash flowed in by the business but not the profit and it is equally important that the revenue streams are clearly defined. Therefore, not only these revenue streams need to be clearly listed but the amount associated with them and their life-cycles should also be carefully specified. Once they are clearly outlined and mapped a business can be able to evaluate whether to choose a revenue stream or not. The table 9 lists the revenue streams elements focused by NTT Docomo, China Mobile and AT&T. Out of the three companies, as illustrated in the table 9, only AT&T focuses on the new converged services. This element provides an edge to AT&T for getting access to new combined services in the
telecommunication industry which represents the new customer need with the changing demands and emerging new trends in technology.

<table>
<thead>
<tr>
<th>Table 9. Business Model Components – Revenue Streams</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue Streams</strong></td>
</tr>
<tr>
<td>Mobile and broadband communications services</td>
</tr>
<tr>
<td>Equipment sales</td>
</tr>
<tr>
<td>Other services (content services/payment solutions/device protection services)</td>
</tr>
<tr>
<td>Sales of all services and devices</td>
</tr>
<tr>
<td>Network infrastructure</td>
</tr>
<tr>
<td>Consulting and rebuild businesses</td>
</tr>
<tr>
<td>New converged services</td>
</tr>
<tr>
<td>Service fees</td>
</tr>
<tr>
<td>Roaming charges</td>
</tr>
<tr>
<td>Subscription fees</td>
</tr>
<tr>
<td>Interconnection fees</td>
</tr>
<tr>
<td>IoT projects</td>
</tr>
<tr>
<td>Mobile payment commissions</td>
</tr>
</tbody>
</table>

*Source: Author's own elaboration*

This element can also help AT&T generated better revenue in a number of customer segments associated with the customer demands in these new converged services.

Every BMC component and its entities contribute to the successful business and market capture if considered carefully and incorporated in the business model of the organization. However, it is not a simple and straightforward task. Impact of each component on business cost while incorporating it/them must be evaluated. The next section presents qualitative and quantitative analysis and evaluation of the AT&T, China Mobile and NTT DOCOM.

4. Results and Discussion

Over the last two decades, the telecommunication business industry has emerged as one of the largest revenue generating industries in the world. The companies associated with telecommunication business generate revenue via products and services sold to customer/clients.

4.1 Economical Affect

There are different ways of analyzing any company’s business sustainability; these may either include answering some simple questions based on various business core activities or detailed business model analysis (Ribeiro et. Al, 2023). The former (Figure 5) may involve these:
1. Identification of key stakeholder/s which is also known as stakeholder profiling.
2. Competition in market capture in terms of focus on customers? Or Context Mapping.
3. What moves or can make the customers loyal? In other words “Core Distribution”.
4. How the business will make money?! The most important one; Revenue Generation

![Figure 5. Major questions for business analysis of a company](image)

Source: Author's own elaboration

### 4.2 Findings and Recommendations

On the other hand sustainability of the Business models is often analysed via identifying major elements and activities that are vital to generate value for business. It can also be used to identify opportunities to start new business or how to grow existing business via those opportunities in the market place. Three main methods to analyse the business conducted by these companies were used that include behavioural analysis, retention analysis and channel analysis. For each telecommunication company focused in this research the following has been done for:

1. Identification of key stakeholder/s which is also known as stakeholder profiling.
2. Relationship between the company’s BMC key attributes and strategies has been explained and highlighted.
3. Value proposition has been created for business’s customers.
4. Customer segment has been determined.
5. What channels are created and how they are used by the businesses to reach to their customers have been thoroughly discussed.
6. Which company focuses on customers and its relationship that need to be created to achieve customer loyalty has been identified and presented.
7. Revenue streams creation for the business enterprises have been focused and evaluated to determine the value of success.
8. Key resources with respect to a company’s capability to successfully conduct business in the market have been determined.

Based on the above key points used for analytical methods based on BMC has been used that helps in visualizing vital building blocks needed to run a sustainable successful business. For all the three companies focused to provide a detailed insight into their business capabilities and success the BMC components are highlighted to provide an insight regarding strengths and weakness of each. The table 10 shows what elements are solely focused by any of the three companies.

<table>
<thead>
<tr>
<th>BMC Components</th>
<th>China Mobile</th>
<th>AT&amp;T</th>
<th>NTT DoCoMo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Activities</td>
<td>Micro Cell</td>
<td>Sales Channels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Landline Phone</td>
<td>DMarket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hosting</td>
<td>DoCoMo ID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IPTV</td>
<td>Healthcare</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uverse</td>
<td>Education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overseas Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corporate Customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M2M</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reputation and Brand</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Capital Expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alliances</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ARPU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Partnership</td>
<td>Support from Chinese Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value Proposition</td>
<td>Telecom services to interconnect Chinese Society</td>
<td>Accessibility of its multimedia channel services</td>
<td></td>
</tr>
<tr>
<td>Customer/Client Relationship</td>
<td>Free Upgrades</td>
<td>Self-service base</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rollovers and Promotions</td>
<td>DoCoMo Shop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DMarket Portal</td>
<td>Mobile Network Subscription</td>
<td></td>
</tr>
<tr>
<td>Customer Segments</td>
<td>Customer Base</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Key Resources</td>
<td>Chinese Government</td>
<td>Patents for LTE</td>
<td></td>
</tr>
<tr>
<td>Distribution Channel</td>
<td>Weixin (WeChat)</td>
<td>Website</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Online store/DoCoMo shop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Online Entertainment/DMarket can be accessed Mobile Application and on Desktop browser

<table>
<thead>
<tr>
<th>Cost Structure</th>
<th>Acquisition of other companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Payrolls of employees, attorneys and all</td>
</tr>
<tr>
<td>Revenue Streams</td>
<td>New converged services</td>
</tr>
</tbody>
</table>

Source: Author's own elaboration

The table 10 illustrates NTT Docomo generates business mostly from "customer-centered" and "business-capture" methods. While it facilitates its clients and/or customers, it also explores latest trends in the market, products and services by competitors, research and technology analysis, makes it easier to conduct business and accesses broad range of markets with the help of partners and allies. This helps in business growth as well as market capture. Nevertheless, partnering with other companies and business may also help in adapting the technology changes with minimal cost related to infrastructure and services. With emerging technologies, the needs and demands of the customer and/or clients are also changing. While adapting to these changes pose a challenge to conduct business, certain business related decisions in such scenario also bring in risks associated with this adaptation. These risks may be minimized and the challenges may be met via associations and partnerships and market survival for a business may be successful.

The AT&T, on the other hand, seems more likely to invest in the infrastructure and keeps a watch over the competitors, their products and services. Such investments may be fruitful as long term business survival tactics. AT&T as an alliance to another telecommunication or Information Technology business company may help in providing up-to-date products and services that can support the rapidly changing technology and trends in telecommunication. While AT&T and NTT Docomo may be able to generate greater revenue or capture greater market share globally, China Mobile is still a successful telecommunication business company in the regional China. The ability to communicate with the Chinese Government plays a vital role in conducting business successfully and acquiring products and service licenses. China Mobile conducts successful business of providing connection to millions of people across urban and rural areas of China.

Moreover, it is also important to analyse the financial statements of the teleco giants to gain a better understanding of the real-time impact of their business strategies on their annual revenue and other important financial matrices. For any company, an analysis of its financial statement helps the decision-making process as well as it can help the stakeholders gain a better insight into the company’s performance, health and business value (Al-Omoush et. al, 2023). These statements can be analysed based on past, present and future performance. The income statement can illustrate the revenue breakdown into expenses involved in the business based on gross profit, net income taxes, etc.
A graphical representation of the business analysis has been presented below to highlight the strengths and weaknesses of these Teleco giants which include their five years net income and revenue statement. While revenue can illustrate the impact of market success of a company, it can also depict the sales activities and growth overtime (Tanjung, 2023). It can help in setting marketing campaigns and can be used as a benchmark for the product initiatives, future strategic plans and new business opportunities (AT&T Financial Review online, NTT Docomo Financial Review online, China Mobile Financial Review online).

![Comparison of the 5 years net-income of China Mobile, AT&T, and NTT Docomo](image)

**Figure 6.** Comparison of the 5 years net-income of China Mobile, AT&T, and NTT Docomo  
*Source: Author's own elaboration*

Comparing the annual net income of all three tech giants, figure 6 illustrates how during and post pandemic sales have contributed to the business growth. Meanwhile, the total revenue of each company over last five years have been shown in figure 7, depicting while NTT Docomo sustained the impact of the pandemic and got back on the track to grow its business, China mobile’s business has grown tremendously over time and the total revenue is greater than that of AT&T in the year 2022 which is very promising.

China mobile provides mobile social networking services also known as SNS and with the launch of 5G in the technology world it is a favourable service to capture significant revenue. Nevertheless, the companies need to be investing into the property, plant and equipment and the cost to it, due to frequent technological changes, can at times be huge (China Mobile Financial Review online). This research detailed BMC based analysis for business sustainability that includes route to gain a place in the market, capture customers, managing finances as well as value proposition helped in understanding the pros and cons associated with various formats of business dealings related to these three telecommunication giants. Not only it shows how a business can be started strategically but also shows how a right strategy can help determine behaviour of each BMC block.
Figure 7. Comparison of the revenue generated by China mobile, AT&T and NTT Docomo over last 5 years

Source: Author's own elaboration

Consideration of the key attributes of the BMC blocks helps create strategies that can assist in putting focus on all the factors together. With the help of this research it will be easier to conceptualize how various business models behave under different business environments. Researchers, innovators as well as entrepreneurs will be able to have an overall understanding of how to analyse their business or venture for sustainability and incorporate or create strategies that focus on all factors. Moreover, for an investor it is equally important to review the non-financial information of the company to develop an insight into the factors that can have an impact on the company’s return, company’s management, as well as its competitors.

Each company has its own strengths and weaknesses and uses specific business model to conduct successful business in the telecommunication industry with sustainability. However, it is equally important to understand what changes may affect the business with changing trends in technology. Nevertheless, various business models are used by different telecommunication business companies and these models may be a combination of multiple business models to survive the competition for long term. The question remains which business model can be the most suitable one to use with changing business trends and client/customer demands and needs for sustainable business in the market? The next section outlines some open research issues related to the same.

5. Open Research Issues

Telecommunication has evolved in the past few decades changing the simple form of communication into exchanging and sharing any form of information and/or data anywhere, anytime, with anyone and everyone. The telecommunication service providers, from time to time, need to consider the growing demands of the customers and the market competition to conduct successful and sustainable business (Goebel et al, 2023).
The world is in the phase of adapting 5G (5TH generation) that is basically designed to support the growing data, its efficient transfer and seamless connectivity, the mobile telecommunication companies are as per need incorporating infrastructural as well as service changes that can support this evolution. A number of challenges are associated with the same. Initially, as planned, the 5G will be operating on the existing 4G infrastructure and networks before it can actually starts to operate independently (Hoang et al., 2022; Moussaoui et al, 2022). 5G incorporates the IoT (Internet of Things) consisting of billions of devices connected and communicating and handling tremendous amount of data. 5G is said to incorporate immense machine to machine communication that is in other words also known as IoT, extremely reliable communication with low latency (improving device response time) and improved mobile broadband (this includes enhanced data transfer rate and better bandwidth capacity) (Gyemang & Emeagwali, 2020; Kalem, 2021). Hence, for the communities it promises smart homes, smart schools, better healthcare, and safe and smart cities (figure 8). For the industries and other businesses the 5G network will be able to provide the data that they need to make mission critical decisions to conduct successful business using the IoT and make progress in terms of better product design and manufacturing, better customer relationship and hence long term business sustainability as well as growth (Aljanabi, 2022).

Telecommunication business companies need to plan and shape their products and services according to the demand of the customers and market need. Hence it is important to keep focus on the how to promote the products to the customers and in return how to gain loyalty from the same to not only survive the competition but to gain good revenue. For this purpose it is vital to understand what business components are important with rapidly evolving technology to make sure the expertise, products as well as services are up-to-date.

![Figure 8. 5G Technology and its promises](source: Author's own elaboration)

Not only that the policies and procedures will gradually change and will be globally adapted, incorporating energy efficiency and green communication will also play a vital part in business growth in near future.
(Mushafiq et. Al., 2023; Habibniya et. Al., 2022; Sanchez-Segura et. Al., 2022). It will be important for the telecos to focus on these two aspects to develop or improve the pathways to market capture. It is important to consider the fact that soon the traditional business models may not help in the telecommunication business industry neither can a hybrid model focusing on certain components might promise a successful growth in the revenue due to the interconnected behaviour of the business components, demands and needs of the customers in this industry. Hence an optimal business model designed for the telecommunication business that can encompass various components while providing flexibility of the focus needs to be designed to help the telecommunication business companies sustain in the market fruitfully. Nevertheless, changing a business model or its innovation requires certain capabilities such as being adaptive and flexibility in decision making. Business perspective also plays a vital role in key decisions for a company. Hence, creation or designing a business model cannot provide an assurance for success instead requires exploring, discovering, adapting, reviewing and evolving until a so called optimal business model is reached.

CONCLUSIONS

A detailed comparison among three successful telecommunication companies based on the business model canvas have been presented to help understand in depth how each company focus different components of the BMC and their individual entities to run a sustainable business. This detailed investigation provides an insight into how focusing on various BMC components can actually shift the business goal. Nevertheless, it also highlights various BMC components and their detailed entities and provides better individual understanding regarding same. The analytics of a business model brings together the BMC structure along with the analytics from the customer as well as operational data. When these are combined, this research can be used to connect strategic insights regarding how to improve customer loyalty, retain it and as well as grow in the market and sustain that growth. Various solely focused entities of BMC components have also been discussed to ensure that the researchers can acquire in depth analysis of the comparison regarding the three telecommunication business companies and to better understand the importance of focusing those entities and also highlights the strengths and weaknesses of these companies. The financial factor comparison of the three teleco gains further highlights the weaknesses and strengths in the real-time environment based on their business strategies and approaches. This research will help researchers globally in understanding behaviour of various telecommunication business models and the strategies behind the success or failure of the businesses.

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FINANCIAL ASPECTS OF SOCIO-ECONOMIC REJECTION IN UKRAINE IN CONDITIONS OF ECONOMIC TURBULENCE

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ABSTRACT

Objectives. The relevance of the study of socio-economic rejection in Ukraine is determined by the increase in the number of factors of turbulence in the economy of Ukraine as a response to the degree of increasing uncertainty of financial security and the growth of Ukraine’s debt indicators. The purpose of the article is to summarize and present the causes and forms of the phenomenon of socio-economic rejection in Ukraine at various levels of its manifestation through the prism of financial interpretation of the actual turbulence of the economy. Methods/Approach. The research was based on expert reviews and assessments of the state of the state budget, the amount of state debt, modern theoretical and methodological, regulatory and legislative aspects of the amount of international financial assistance; methods of dialectics, methods and principles of scientific knowledge, tools of statistical and economic analysis are used. Results. The obtained results of the research created a basis for substantiating the regularity and algorithms of the manifestation of the phenomenon of socio-economic rejection as a result of the growth of social tension, financial obligations and the ratio of the amount of public debt to the size of the country's gross domestic product. The trends of changes in the export potential of key global exporters were studied as criteria for forecasting financial capacity and dependence on external borrowing. The cost of public debt service was analyzed from the point of view of the impact of this indicator on the size of the public debt and the possibility of intensive development of the country's economy. It was established that, taking into account the laws of turbulent entropy logics, it is necessary to rely not on one trajectory of the development of the socio-economic and financial system, but on a set of the most likely development scenarios, including those that are unlikely. The practical value of the research results is related to a number of proposals for Ukraine’s exit from the systemic crisis through qualitative changes in its leading idea: representation on the financial market, construction of the architecture of new target orientations, which form a new vector direction of development for the search for positive synergistic effects. Conclusions. It has been established that the primary means of leveling the manifestations of socio-economic rejection is the formation and observance of a state strategy for reducing the state debt, compliance with state guarantees, social obligations, which will guarantee social involvement, social justice and the economic effectiveness of the social contract with the population.

Keywords: socio-economic rejection, economic turbulence, public debt, export potential, financial guarantees, gross domestic product

JEL classification: B55, D23, G40, H63
Paper type: Research article


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INTRODUCTION

Building a legal, democratic, social state in Ukraine is a strategic direction of activity of state authorities, population, public organizations and business structures of all forms of ownership. The nationwide goal of building a welfare state activates the problem of human capital development, promotes the emergence of new socio-economic relations and the orientation of entrepreneurship on the path of independent choice of the next line of behavior under conditions of constant structural transformations (Ramazanov & Petrova, 2020). All this actualizes the problem of independent organization of enterprises in the conditions of turbulent economy, changing external environment of functioning and unpredictable information space, simultaneously with the development of processes of socialization of the economy to meet the material, cultural, and spiritual needs of society.

To date, the concept of turbulence has naturally moved from the field of knowledge of gas dynamics, mechanics, gas or plasma to use in those socio-economic processes and complex systems, the behavior of which is not subject to linear prediction, but is more prone to stochastic and chaotic movement. In general terms, turbulence is understood as a phenomenon of self-organization, as a result of which there are regular or irregular (chaotic) transitions from chaos to order and vice versa (Busel, 2009).

In turn, the essence of self-organization as a process is considered by K. Simakov as the formation of a set of actions leading to the creation of stable reactions in the system (Simakov, 2002). Thus, self-organization is a process during which the organization of a complex dynamic system is created, reproduced, and improved.

The main characteristic of the self-organization of the enterprise is the ability for continuous self-improvement with a continuous increase in production efficiency. In order to achieve such a state of the enterprise and its correct management, first of all, a balanced, conceptual approach to understanding the processes of self-organization in a modern enterprise is necessary.

Turbulence can also be understood as a complex trajectory of development of the world (tera-mega economy), national economy (macroeconomics) or an individual firm (microeconomics) in the process of transformations. Turbulence means the extreme degree of instability of the global economic system and the national economy, when there is the greatest probability of reaching the point of bifurcation or breaking (Reshetylo, 2006; Em et al., 2022; Matyushenko et al., 2020; Jarmusevica et al., 2019). In conditions of economic turbulence, the traditional logic and sequence of many economic processes is disrupted.

However, turbulence in the socio-economic system is caused not only by economic, but also by non-economic factors, in particular, demographic, environmental, technological factors, military conflicts. In conditions of economic turbulence, entropy increases as a measure of chaoticity and a measure of uncertainty of development in these conditions.

**Ukraine’s economy is in a state of turbulence**

For Ukraine, the fact of being in a state of turbulence is undeniable. On February 24, 2022, the Russian army invaded Ukraine and opened a front line across a wide perimeter, marking the largest war on the European continent since World War II (Abuseridze & Agapova, 2023). Earlier, in 2005, the Russian Federation
launched a full-scale trade/economic blockade on Georgia, which later turned into the Russian occupation followed by the occupation of Georgian territories (Abuseridze, 2020). In nearly three decades of independence, Ukraine and Georgia have sought to forge their paths as sovereign states while aiming to align more closely with Western institutions, including the European Union. This alignment was expected to bring about economic transformation in the long run. However, the scenario unfolded differently (Abuseridzem & Grasis, 2022). As the Center for Economic Strategy notes (Mykhailyshyn, 2023), there is a possibility that up to 3.3 million of those who left the country due to military operations will not return to Ukraine. If such a forecast is justified, the non-return of Ukrainians will have a significant impact on the Ukrainian economy, which may lose up to 7% of its GDP every year.

On November 9, 2023, the Verkhovna Rada of Ukraine adopted in the second reading and in general the draft Law on the State Budget of Ukraine for 2024 (registration number 10000). According to the adopted Law, the revenues of the state budget for 2024 are determined in the amount of: 1.7685 billion UAH (increased by 22.2 billion UAH), expenses: 3.309 billion UAH (Law of Ukraine on the State Budget for 2024). It is easy to calculate that the size of the state debt in 2024 for Ukraine is UAH 1.541 billion, i.e. 87% of the total state budget revenues.

METHODOLOGY

The proposed research methodology is based on the methods of statistical comparative analysis, logical-heuristic, graphic modelling, extrapolation, which made it possible to ensure the consistency and unity of the identified theoretical constructions and proposed hypotheses. Using mathematical modelling methods, specific factors affecting the emergence of socio-economic rejection are determined. Graphical modelling methods are used to construct the dependence and relationship of the state debt and indicators of the gross domestic product.

Programmatic and strategic methods aimed at achieving the country's national interests in conditions of global threats and formalized in the concept of the country's national security should play the main role in the issues of developing the levelling of the manifestation of socio-economic rejection. Based on this, the processes of globalization and internationalization play a special role in changing the role, essence and meaning of financial support. As a result of the increasing processes of deregulation and globalization, the hypertrophied development of the financial sphere is taking place, which changes not only the essence of the financial market itself, but also gives it the status of a special supra-economic financial production, which has its own unique technologies, laws, risks, etc. As a result, economic management tools are weakening, the income distribution scheme is being transformed, and many other basic categories of economic security are changing their meaning.

RESULTS

Factors catalyzing the state of turbulence and manifestations of rejection
A significant factor in catalyzing the state of turbulence and manifestations of rejection is the fact of life and functioning in debt. However, in the modern world, not only certain business entities, but also individual states become bankrupt. In particular, the annual inflation rate in Argentina reached a thirty-year high and exceeded 100% (Pozzebon, 2023). Any internal and external monetary borrowing, borrowing from international banks, state and non-state funds, international financial organizations, permanent debt restructuring of state-owned enterprises - all these are different sides of existence in debt for the future (Zhuravleva, 2013). However, what is interesting is that the world's largest economies, such as the USA, Japan and a number of EU countries, have the largest amounts of public debt. For example, in the USA, the ratio of public debt to GDP for 2022 was more than 129% (Macroeconomic statistics, 2023). From 1966 to 2020, the average annual growth of the US public debt was 8.3%, and nominal GDP - 6.3% (Figure 1). In April 2022, the ratio of the country's federal debt to GDP reached 129%, compared to 107% at the end of 2019, reaching more than $33 trillion in January 2023 (Macroeconomic statistics, 2023)

![Figure 1. Ratio of US federal debt to GDP, %](source)

Another world's most powerful economy attracts attention - Japan, where the ratio of public debt to the country's GDP is more than 260%. (Figure 2) (Macroeconomic Statistics, Japan, 2023). Japan's total debt exceeds $48 trillion.

![Figure 2. Ratio of Japan's public debt to GDP, %](source)
Ukraine's gross foreign debt as of July 2023 amounted to almost 42 billion dollars, having increased since the beginning of the year by 19.4%, that is, by almost 8 billion dollars. (Figure 3). Relative to GDP, the volume of Ukraine's debt increased by more than 60% from December 31, 2021 to December 31, 2022. (National Debt of Ukraine, 2023). As a result of attracting loans from international financial organizations, the debt of the public sector increased by almost 17.6 billion dollars. (Table 1).

The amount of Ukraine's gross foreign debt in 2022 increased by $1.2 billion. and at the end of the year was 131.0 billion dollars. USA. In relation to GDP, the volume of debt increased over the year from 64.6% to 82.3%.

The external debt of the public sector increased by USD 12.1 billion. $ and amounted to 69.1 billion dollars. (43.5% of GDP). External liabilities of the private sector decreased by USD 10.8 billion. $ and amounted to 61.8 billion dollars. (38.8% of GDP).

Table 1. External state and state-guaranteed debt of Ukraine from 2012 to 2023 (million USD)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Total debt</th>
<th>State debt</th>
<th>Guaranteed debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.12.2011</td>
<td>37 474,5</td>
<td>24 507,1</td>
<td>12 967,5</td>
</tr>
<tr>
<td>31.12.2012</td>
<td>38 658,8</td>
<td>26 137,7</td>
<td>12 521,1</td>
</tr>
<tr>
<td>31.12.2013</td>
<td>37 536,0</td>
<td>27 901,4</td>
<td>9 634,6</td>
</tr>
<tr>
<td>31.12.2014</td>
<td>38 792,2</td>
<td>30 809,1</td>
<td>7 983,1</td>
</tr>
<tr>
<td>31.12.2015</td>
<td>43 445,4</td>
<td>34 427,0</td>
<td>9 018,5</td>
</tr>
<tr>
<td>31.12.2016</td>
<td>45 604,6</td>
<td>36 048,3</td>
<td>9 556,3</td>
</tr>
<tr>
<td>31.12.2017</td>
<td>48 989,4</td>
<td>38 490,1</td>
<td>10 499,3</td>
</tr>
<tr>
<td>31.12.2018</td>
<td>50 462,5</td>
<td>39 706,6</td>
<td>10 755,8</td>
</tr>
<tr>
<td>31.12.2019</td>
<td>48 940,8</td>
<td>39 342,5</td>
<td>9 598,3</td>
</tr>
<tr>
<td>31.12.2020</td>
<td>53 720,8</td>
<td>44 510,7</td>
<td>9 210,1</td>
</tr>
<tr>
<td>31.12.2021</td>
<td>57 197,0</td>
<td>47 654,7</td>
<td>9 542,3</td>
</tr>
<tr>
<td>31.12.2022</td>
<td>71 398,6</td>
<td>63 590,9</td>
<td>7 807,7</td>
</tr>
<tr>
<td>31.07.2023</td>
<td>90 766,0</td>
<td>83 414,1</td>
<td>7 351,9</td>
</tr>
</tbody>
</table>

Source: State debt of Ukraine (2023)

External liabilities of the general public administration sector increased by $14.1 billion. – up to 65.3 billion dollars. (41.0% of GDP) due to the net attraction of loans from international partners (14.7 billion dollars) and from the IMF (2.3 billion dollars) (External Debt of Ukraine, 2023).
Such indicators certainly emphasize the current turbulence of the realities of the Ukrainian economy and the related social guarantees and services of the state.

**DISCUSSION**

*The mechanism of burning debt in the fire of inflation*

The realities of 2023 reflect the fact that Ukraine's economy now relies on several "crutches" of foreign and domestic financial assistance. Accordingly, the ability of the economy to finance new production is decreasing. It is very figurative that forecasting the future situation in the economy can be compared to the effect of gravity on the human body. It is known that in order to maintain the muscle tone of a person who is in all the effects of gravity (a space expedition), it is necessary to make colossal efforts in the form of certain physical exercises. And first of all, when such a person falls under the influence of gravity again, certain troubles in the body are possible. Similarly, with the economy of Ukraine, where the peculiar influence of gravity will be the knocking out of the crutches of foreign aid for Ukraine after the end of hostilities on its territory. At least this amount of financial assistance will be extremely unlikely in the future. Therefore, when Ukraine embarks on the path of development, its economy will immediately fall into post-war gravity, and its "muscle tone" in the form of the ability to quickly respond to the entire range of internal productive forces to market demands will most likely be practically atrophied. In this regard, it is practically impossible to predict the model of the economy of Ukraine for the long term. The only significant assumption can be that the main component of development will be the agricultural component.

At the same time, the future economy of Ukraine will have to service the accumulated public debt, which has increased many times since 2022. And the possibilities of the country's economy have significantly decreased due to the displacement of part of the working population, the unsuitability of part of the agricultural territories for processing and many other reasons. There is a possibility that after some time the ratio of the country's public debt to GDP will reach 100%. In economic theory, this means that the country is in a state of bankruptcy.

However, the world economy has real examples when developed countries have public debt and are higher than 100% in relation to the size of GDP: Great Britain, France, Spain, Italy, Greece, Canada and the absolute leaders - Japan and the USA (Figure 1 & 2). However, a very important aspect here is that Japan denominates its public debt in yen, the United States - in US dollars, that is, currencies that are national for these countries and their volume of emission depends on the decision of these countries. In turn, the foreign debt of Ukraine is not defined in the national currency hryvnia, but to a greater extent includes the US dollar, euro and other world currencies.

There are several reasons for this situation: firstly, the hryvnia is not a freely convertible currency in the world, that is, Ukraine cannot attract financing of its assets in hryvnias on international markets, and secondly,
the volume of internal sources to compensate for the budget deficit in Ukraine is not sufficient. Thirdly, the country receives financial assistance in currency, which is 60-70% a classic financial loan on a revolving basis.

Based on this, there is another important indicator for determining the impact of the size of the state debt on the economy of the country - it is the cost of its maintenance. In other words, it is the percentage of the use of a financial loan (asset), without returning the body of the loan. This indicator shows the burden on the budget, its expenditure part of servicing the current debt. In Ukraine, this indicator has increased by approximately 1.5-2 times since 2022. As of January 2022, public debt service cost Ukraine about 150 billion hryvnias, and by September 2023, this figure will exceed 260 billion hryvnias (Debt Payments and Forecasts, 2023). Based on the fact that the revenue part of the state budget for 2024 is UAH 1.746 trillion (the law of Ukraine on the state budget for 2024), about 10% will go only to service the state debt (without returning the main part - the body of the loan), which can compare with the amount of state spending on health care and education. Thus, in the hierarchy of state priorities, a figurative creditor is on the same level as a teacher and a doctor. In other words, the service of the national debt was compared with the costs of the nation's health and its intellectual potential. At the same time, it is quite naive to believe that the health care of the nation and its educational opportunities can be competitive with such a system of state priorities.

Considering Ukraine's desire to join the European community, one should not forget the existence of a set of rules for new members of the European Union - the Maastricht criteria, which state that the ratio of public debt to the country's GDP should not exceed 60%, and the budget deficit should not exceed 3%. (Universität Münster, 2007).

The "Washington Consensus" agreement, agreed in 1990, laid the groundwork for this development (Ananyin, 2010). The relevant agreement provided for a series of economic policy rules for state governments. The purpose of the document was for states to move away from the command model of economic development and adopt the economic policy principles of most developed states. It was about the principles that reflected the general position of the US administration, the main international financial organizations - the IMF and the World Bank, as well as leading American think tanks. Their main offices were located in Washington - hence the term "Washington Consensus" (Ananyin, 2010). Consequently, the agreement provided for the liberalization of trade, foreign direct investment and privatization.

However, a historical analysis of the dynamics and sources of development of socio-economic relations shows that highly developed countries have acquired their capital using methods that today are almost completely prohibited by the same Washington consensus. This is the model that the government of Ukraine is currently trying to implement.

The existence of a multiplicity of states, multi-vector development paths and sources of impulses, periodicity and the emergence of new cycles are features of nonlinear systems. The basis of multivariability is the passage of the system through bifurcation points, exits of the system from the state of homeostasis, transition of the system into a non-equilibrium state. Bifurcation is a manifestation of non-linearity and the possibility of choosing development paths. It is at the point of bifurcation that the search for a new path takes
place, the implementation of one of many possible options. The socio-economic system enters a state of chaos, from which it self-organizes into a different cycle and a different configuration. In other words, nonlinearity in practice reflects fluctuation, irreversibility, transitions of cycles from order to chaos and from chaos to order (Druzhynina, 2018).

The era of turbulence for Ukraine has not only negative and destructive manifestations. The theory of complex systems itself emphasizes the necessity of parallel positive processes associated with synergistic directions necessary for further development. Thus, taking into account the laws of turbulent entropy logic, it is necessary to rely not on one trajectory of the development of the socio-economic system, but on a set of the most likely development scenarios, including those that are unlikely.

As the financial analyst of the "United Ukraine" Analytical Center O. Kush notes (Kush, 2023), the four countries that currently occupy a leading place in world exports are Britain, the USA, China and Japan. The United Nations Conference on Trade and Development (UNCTAD) provides a schedule of changes in the export potential of key world exporters (BRICS Investment Report, 2023). As we can see, by the mid-1980s, Japan almost equaled the indicators of export potential with the indicators of the USA (Figure 4).

![Figure 4. Trends in the export potential of key global exporters](image)


However, on September 22, 1985, a significant historical and financial scale currency agreement "Plaza"-1985 (Plaza Accord) took place, named after the famous hotel in New York, where the meeting and signing of the agreement was held by the ministers of finance and heads of the central banks of the United States and Great Britain, France, Germany and Japan.

The corresponding agreement provided for an agreement on the controlled devaluation of the US dollar. In 2015, a well-known Japanese economist and President of the Japan Economic Association, Ito Takatoshi,
published a scientific paper "The Plaza Agreement and Japan: Reflections on the 30th Anniversary", in which he called this agreement "the collapse of the Japanese economy" (Takatoshi, 2015).

In his work, Takatoshi I. criticized the Plaza Agreement in 1985 at the Plaza Hotel in New York as one of the reasons for the stagnation of the Japanese economy in the following decades. By 1985, the US saw a significant increase in its current account deficit, while Japan's budget surplus was increasing. The consequences of the budget imbalance led to a policy of protectionism and required immediate action. The cause of the problems was believed to be the rapid appreciation of the US dollar against the currencies of the US’s main trading partners, leading to huge trade deficits with those countries. A lower dollar rate would contribute to the stabilization of the world economy, as in this case the import and export capabilities of all countries would be balanced. At the Plaza Hotel, the US persuaded the other participants in the meeting to take a series of agreed measures to regulate the foreign exchange markets, and on September 22, 1985, the Plaza Accord entered into force. Its goal was to lower the dollar exchange rate and increase the exchange rates of other currencies. Each country agreed to change its economic policy and intervene in the currency markets to the extent that the devaluation of the dollar was necessary (Takatoshi, 2015).

But, interestingly, all the representatives of the agreement signed, but only Japan fulfilled the conditions. And it immediately received stagnation of development, "zero" growth, a deflationary trap, a crisis in the real estate market and in the financial system, excessive accumulation and a shortage of investment directions.

As part of the Plaza Agreement, Japan agreed to a 10-12% rise in the national currency from 240 to 216 yen/dollar, but the exchange rate did not stop and continued to rise to 190 yen/dollar until January, and to 160 yen/dollar by the summer of 1986. (Takatoshi, 2015). The Japanese and American authorities agreed in late 1986 that the yen had strengthened enough that the trade deficit between Japan and the United States had narrowed. However, the dollar continued to fall, reaching 150 yen/dollar by 1987. As a result of currency intervention, the dollar exchange rate decreased by 50% against the Japanese yen in two years. As a result, the American economy was oriented towards exports, but other industrialized countries, in particular Japan, increased the share of imports. Thanks to this, the current account deficit of the US gradually decreased. Since then, Japan has fallen out of the orbit of the global mainstream of global exporters. Here it should be noted that in 2019 the National Bank of Ukraine strengthened the national currency – the hryvnia by as much as 15%.

Judging by Figure 4, China should have concluded something like the "Plaza Agreement" sometime in 2007 from the point of view of export market partners. But there was a global financial crisis, which, on the contrary, strengthened China's position, and weakened its Western partners.

Next, there was almost a conflict of interests between the USA and China in the form of a trade war, which was replaced by the global pandemic of COVID-2019, as a result of which China's export potential strengthened again, and its Western partners weakened. By 2023, China's export potential is almost twice that of the United States. Collectively, the United States, along with Japan and Britain, is now behind China in terms of exports. So, the financial world has changed bifurcatingly and it is irreversible.
The situation with indicators of the State Budget of Ukraine and their trend is a direct reflection of this. Thus, the deficit of the state budget of Ukraine in August 2023 increased to UAH 130.7 billion compared to UAH 107.6 billion in July and UAH 135.1 billion in June. Compared with similar indicators in 2022 - (Figure 4). According to the general fund, the deficit increased to UAH 122.2 billion from UAH 94.9 billion a month earlier (table 1).

Revenues to the general fund of the state budget in August 2023 decreased to UAH 124.7 billion compared to UAH 136.7 billion in July 2023 and UAH 133.7 billion in June 2023. At the same time, Ukraine did not receive international grant aid from the USA in August, then as before, it provided about UAH 45 billion in monthly income.

At the same time, cash expenditures of the state budget increased to UAH 310.1 billion in August, after decreasing in July to UAH 282.6 billion, from UAH 376.4 billion in June. According to the general fund, they also increased to UAH 248.2 billion from UAH 231.9 billion in July against UAH 264.7 billion in June. And the growth of public debt, unfortunately, is not the only problem of Ukraine: due to damage to the infrastructure, its safety margin has been destroyed.

**Marker indicators of debt obligations and the occurrence of rejection**

Meanwhile, the public debt of Ukraine reached 133 billion dollars. (Kush, O. (2023b), which brought the ratio of debt to GDP closer to the critical mark of 100% of gross product. However, to calculate the indicator of the debt burden through GDP, it is necessary to know the exchange rate.

At a fixed exchange rate of 36.6, Ukraine's GDP in 2023 could reach 6 trillion UAH or 163 billion dollars. If we forecast an exchange rate of 40 hryvnias for 1 dollar, we will receive 150 billion dollars. The reality of the value of the currency can be seen only after the abolition of currency restrictions and the introduction of a floating exchange rate, and when the factor of the military budget and foreign aid to Ukraine is eliminated.

In any case, the factor of such a massive national debt will be one of the barriers to rapid economic growth after the war. And the problem of the national debt is dragged through the wartime with all their might, dragging them into the period of post-war recovery, when no one will allow a dialogue with creditors about debt cancellation. There is a threat that Ukraine will fall out of the focus of international attention at that time, so it will be quite difficult to count on preferences in this matter.

Already in November 2023, there are manifestations of undeniable financial rejection of obligations financed by the state, in particular, the Ministry of Education and Science of Ukraine took the initiative to deprive students who left the territory of Ukraine of scholarships. "We should not pay scholarships to those students who are abroad... They can continue their studies, please, but the question of providing them with scholarships will probably be closed," Deputy Minister M. Vinnytskyi said.

Another marker indicator of the existence of a difficult situation in budget financing is the statement of the head of the country's government, D. Shmyhal, that Ukraine will attract 1.2 billion dollars. from IBRD, which is part of the World Bank group. These are funds under the guarantee of the Government of Japan, which will
be directed to social expenses (Halytskyi, 2023). In other words, Ukraine's own revenues are not enough to finance its own social guarantees and state obligations.

It is worth noting that Western countries and their allies have provided Ukraine with $233 billion in aid starting in 2022. These are the conclusions of the Canadian Service Visual Capitalist, which summarized data from various sources (in particular, the Kiel Institute of the World Economy) (Bomprezzi, 2023). The study covered the period from January 2022, when the United States began helping Ukraine with weapons, to July 2023, inclusive. The European Union is in first place in terms of the size of the aid, it collectively directed 90 billion dollars to Ukraine's needs, in which direct financial aid prevails (81 billion). In second place is the USA, which sent 73 billion to Ukraine. Of them, 44 billion is for military aid, the rest is financial and humanitarian. Third place is held by Germany with 22 billion. 18 of them are military aid. Britain, which is considered the most active ally of Ukraine, took only fourth place. Half of the 15 billion in aid is military supplies, which is 40% less than Germany's. The fifth place is occupied by Norway with 8 billion in aid, half of which is military aid. Another 26 billion are shared among other countries. The largest share is in Japan - 27% of this amount, followed by Canada (23%), Poland (19%), the Netherlands and Denmark (15% each).

**CONCLUSION**

Thus, in Ukraine today, there is a clear shortage of working capital, a lack of financial resources for development, which are partially compensated by a labour surplus. Due to labour migration, the population flows from the provinces to large cities, which are the centers of economic development. And as long as it is possible to attract such a labour force at the price of an actual living wage, the economy is capable of developing trends. This situation is typical for Ukraine - population movement to cities and territories where there are no hostilities. However, the cost of living in such cities has increased significantly, and in fact the population has to work only to ensure their own existence. In this case, such a model works when the demographic potential of the country is sufficient. For Ukraine, this model cannot work for a long time, because before the military operations on the territory of Ukraine, the country was in a demographic pit, now we can confidently state a demographic collapse. Accordingly, under such conditions, Ukraine must attract labour in all possible ways, and the reverse process takes place - the loss of the working population of the country (Mykhailyshyn, 2023). Thus, in order to ensure trends towards economic development, Ukraine will have to either attract new labour migrants from other countries, whose standard of living is obviously even lower than in Ukraine, or significantly raise wages in safe territories. At the same time, there is a risk of another economic trap: a mechanical increase in wages in the absence of a real increase in added value can cause the bankruptcy of a significant number of business entities, primarily small and medium-sized businesses, because they will not be able to pay competitive wages. As world experience shows, in order to attract social migrants who may become labour resources in the future, the state must be able to provide social benefits at the level of 500 euros and above. And world-class labour migration is currently at the level of ensuring a salary of 1,500 euros, which is hardly realistic for Ukraine today. And this is already threatening a systemic crisis: lack of
working capital, lack of transfer of labor and intellectual capital (both internal and external), capable of triggering a complex of new bifurcation transformations and directions of rejection: economic, social, organizational psychological, etc., which will be the basis of new populist ideas and currents, social booms and new perestroika and social contract.

So, today's realities are moving Ukraine to the point of bifurcation and a real way out of the systemic crisis, which is possible due to a qualitative change in its leading idea - representation on the financial market, the construction of the architecture of new target orientations, which form a new vector direction of development for the search for positive synergistic effects. Ensuring this is possible on the basis of the use of a synergistic paradigm of development, volitional vector definition of the goal, the methodology of information-synergistic meaningful analysis and management technologies based on forecasting, scenario modelling, strategic planning, which are a mechanism of state-building management and the construction of a future socio-economic foresight for Ukraine.

**Author Contributions:** Conceptualization, G.L.; methodology, G.L., I.N.; formal analysis, T.I. and M.M.; investigation, G.L.; project administration, G.L., T.I, I.N.; data curation, A.G-Ch., T.I. and M.M.; resources, A.G-Ch. and M.M.; supervision, G.L.; validation, I.N., A.G-Ch.; writing—original draft preparation, G.L., T.I.; writing—review and editing, G.L.

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THE EFFECT OF ISLAMIC DEVELOPMENT BANK PROJECTS ON ECONOMIC GROWTH IN THE GULF COOPERATION COUNCIL COUNTRIES

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ABSTRACT
Background: Islamic Development Bank in GCC countries facilitates economic growth by funding infrastructure projects, promoting Islamic finance, and fostering collaboration among member states. It supports diversification efforts, social development, and sustainable initiatives, aligning with regional priorities and Islamic finance principles for inclusive prosperity. Objectives: The study seeks to elucidate the significance of the Islamic Development Bank in fostering economic expansion in GCC countries via foreign direct investment. Methods/Approach: In this work, we employ the Panel data approach to analyze the GCC countries from 1980 to 2023. Results: We discovered a notable and meaningful correlation between foreign direct investment, the expansion of individuals, and the overall population with the economic growth of GCC countries. Additionally, we observed a detrimental effect of inflation on growth. The Islamic Development Bank's projects in the Gulf Cooperation countries are highly significant as they encourage intra-Arab investments among these nations. Initiating this study involves examining the pertinent literature on the programs of the Islamic Development Bank and their influence on the economies that receive benefits from them, either directly or indirectly. Conclusions: The findings of this study can serve as a reliable resource for decision-makers in the GCC countries to facilitate economic development through the implementation of projects by the Islamic Development Bank. Researchers and academics might derive advantages from it and regard it as a study that introduces novel perspectives to the issue being investigated.

Keywords: Islamic Development Bank, Economic Growth, Projects, GCC countries.
Paper type: Research article.


INTRODUCTION

Islamic nations experience a widespread state of economic underdevelopment, highlighting the pressing necessity for economic advancement within these countries. Each of these countries endeavors to enhance their economic development to different extents, with varying levels of commitment and success. However, due to internal divisions and political conflicts among Islamic nations, as well as the adoption of foreign development models, such as socialism or capitalism, the movement of capital does not serve the best interests of Islamic countries.

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The countries with a financial surplus, however few in number, provide their funds to the international community, while countries with a capital deficit seek external sources to fulfill their financial requirements, so substituting for there should be a transfer of funds between the regions with excess capital and the regions with insufficient money within the Islamic world. Furthermore, a key challenge that Islamic countries encounter in their pursuit of development is the acquisition of sufficient financial resources and their effective allocation towards the attainment of desired objectives. Non-oil-producing Islamic countries face significant challenges in securing adequate financial resources for economic development. These challenges stem from low savings rates and low real incomes, which have forced them to rely on external borrowing. As a result, these countries have accumulated substantial debts and are now faced with the difficult decision of whether to prioritize debt service payments (including interest and installments) or financing necessary imports for development purposes (Sidak et. al., 2023).

The establishment of a non-traditional financing institution is necessary to prioritize the positive effects of aid over the negative ones. This institution should be tailored to the specific characteristics of Islamic countries, support the development process, and adhere to the provisions of Islamic law, which serves as the primary reference for all Islamic countries and peoples. The establishment of The Islamic Development Bank (IsDB) in 1975 has facilitated the mobilization of capital from Islamic countries. This capital is then utilized to support economic and social development activities within these countries, fostering cooperation and exchange in the economic sector. The ultimate goal is to enhance the standard of living for Islamic societies.

The Islamic Development Bank is a multilateral financial institution that adheres to Islamic law and aims to support member states in their efforts to achieve economic development and social progress. It also aims to strengthen their ability to effectively address regional and global challenges. Over the course of several decades, this organization has broadened the range of its activities and varied its offerings. As a result, it has been able to enhance its services to both its member states that follow the Islamic faith and to Islamic communities in non-member states. Nevertheless, this expansion has presented additional obstacles, particularly when considering the development issues faced by these countries and the significant disparity in economic performance between different Islamic nations (Beggache, 2013). The stark reality of Islamic nations, coupled with the establishment of the Islamic Development Bank as a means to alleviate this predicament by offering essential funding for the development process, undoubtedly prompts us to examine the role played by the Islamic Development Bank in promoting development in Islamic countries through diverse programs. Furthermore, this pertains to the operations and assistance offered by the Bank to GCC countries, who were its founding members, in order to facilitate the development process from 1980 to 2020. The significance of this study lies in its focus on a crucial subject pertaining to the developmental circumstances of Islamic nations and the challenges they face. It emphasizes the value of utilizing Islamic financial models as a viable solution to overcome the predicament of underdevelopment.

The Gulf Cooperation Council (GCC) nations have undergone substantial economic expansion in recent years, propelled by factors such as infrastructural development. Yet, it is crucial to evaluate the exact influence
of projects financed by the Islamic Development Bank on this growth path. This study aims to investigate the correlation between IsDB-funded projects and economic growth in the GCC region. This research intends to analyze the impact of IsDB financing on important economic variables like GDP growth, employment rates, and infrastructure development to evaluate the usefulness of Islamic finance in fostering sustainable development in the region. Although infrastructure investment plays a crucial role in economic advancement, there is a lack of thorough studies assessing the direct influence of IsDB programs on economic growth in GCC countries. Existing literature provides insights into many facets of Islamic financing and individual case studies, but there is a lack of a comprehensive evaluation of the overall performance of IsDB-funded initiatives in promoting economic progress in the region. This project aims to address the following research issues in order to fill the existing gap. What is the IsDB’s level of participation in funding infrastructure projects in GCC countries? How do projects sponsored by the Islamic Development Bank impact important economic indices in the Gulf Cooperation Council (GCC) region? What are the mechanisms that cause IsDB programs to impact economic growth? Do IsDB programs have varying impacts across different industries or nations in the GCC region? What policy recommendations can be made based on the findings to improve the effectiveness of IsDB efforts in fostering sustainable economic growth in GCC countries? This study intends to offer policymakers and stakeholders significant insights to promote economic development in the GCC region through a thorough analysis of these questions.

The significance of this research is in elucidating the nature and functioning of the institution. The Islamic Development Bank is a financial institution that aims to gather and allocate financial surpluses from Islamic nations for optimal utilization. The Islamic Development Bank is widely regarded as the primary catalyst for economic growth in Islamic nations. It achieves this by providing insight into its historical origins and its pivotal role in promoting development in these countries. The bank operates in accordance with Islamic law and employs strategies that align with its principles. Additionally, it fosters collaboration among Islamic nations, recognizing that cooperation is essential for progress. The bank also addresses key challenges that hinder its operations and actively seeks solutions to overcome them. The study revealed a notable and statistically significant influence of foreign direct investment, individual growth, and total population growth on the economic development of GCC nations. These findings align with the conclusions drawn by other researchers, such as Louail (2019), Louail (2015), and Zouita et al. (2020). Furthermore, the adverse influence of inflation on growth aligns with the conclusions made by other scholars (e.g., Louail, 2019; Riache et al., 2020). The findings of this study can serve as a reliable basis for decision-makers in GCC countries to enhance their economies by implementing initiatives funded by the Islamic Development Bank. Researchers and academics might derive advantages from it and regard it as a study that expands the possibilities for the subject being investigated.

This study was broken into four components, with section one being the introduction. Section two consists of literature reviews, whereas section three focuses on study technique. The final segment presents a discussion and draws conclusions.
LITERATURE REVIEWS

Only a few scientific and academic studies and research have been carried out on the subject of the Islamic Development Bank, which we will discuss below:

The study by Soumadi & Al Smadi (2023) found that financing in Jordanian Islamic banks did not have a statistically significant impact on the gross domestic product and inflation. However, it did demonstrate a statistical influence of financing in Islamic banks on the public commercial sectors, housing, and construction. The study found that the majority of financing in Jordanian Islamic banks is focused on the construction and housing sector, with the public services sector following closely to meet the economic objectives of Islamic banking finance.

Orujlu, (2019) conducted a Master's thesis at the University of Yarmouk in Jordan, titled "The role of the Islamic Development Bank in facilitating trade among Islamic countries." The researcher conducted an analysis of the trade and economic collaboration among the member nations of the Organization of the Islamic Conference. The researcher conducted a formal statistical analysis of the Islamic Development Bank's programs for financing trade among its member countries. The analysis utilized data provided by the Bank and other relevant organizations, as well as standard models. The researcher discovered a lack of intra-trade activity among Islamic countries. Furthermore, it was found that the increase in intra-trade volume is influenced by factors beyond the level of financing provided by the Islamic Development Bank for trade purposes.

In study of Alam, (2007) master's thesis at the University of Algeria, titled "The Islamic Bank for Development and Development Finance in Islamic Countries," examined the state of development in Islamic countries between 1990 and 2000. He specifically analyzed the role of the Islamic Development Bank in promoting cooperation among member states. During that same period, he also addressed the obstacles that impeded the Bank's operations. He determined that it is necessary to implement concrete measures in order to form a coalition that encompasses Islamic nations. These measures include the unification of monetary, financial, customs, transport, and transit policies, as well as the anticipation of establishing a unified Islamic market. Additionally, it is important to address matters related to economic protection, support, competition, and freedom, while simultaneously working towards the activation of existing regional alliances and the enhancement of cooperation and trade between different Islamic countries.

Mustafa & Razak (2012) study evaluates the impact of the Islamic Development Bank (IDB) Group on promoting economic growth in African Muslim Countries (AMCs) through foreign aid initiatives. Analysis of balanced panel data from 1987-2010 using a Simultaneous Equations Model shows that investment and human capital have beneficial effects on economic growth. The study suggests giving priority to these strategies to ensure efficient aid distribution.

Abasimel (2023) seeks to narrow the knowledge disparity in Islamic banking and economics by an analysis of its principles, instruments, features, relevance, and impact on economic growth. Islamic banking follows Sharia law, which is based on the Quran and Sunnah. The main characteristics include of adherence to Sharia
law, prohibition of usury, uncertainty, and injustice, as well as the promotion of efficiency, stability, and poverty reduction. It focuses on risk-sharing and provides loans without requiring collateral, promoting entrepreneurship and growth. Islamic bonds (sukuk) involve profit and loss sharing between issuers and investors, unlike conventional bonds which pay interest. Islamic banking plays a key role in fostering economic progress and is gaining attention for its unique offerings.

The study by Daud & Abdul-Razak (2011) investigates the adherence of Islamic Development Bank Sukuk to Maqasid Al-Shari’ah, with a specific focus on human development. The text illustrates a theoretical model showing how Sukuk can attain Maqasid Al-Shari’ah by promoting social fairness through wealth circulation, development, and preservation. Data is gathered through semi-structured interviews and content analysis of Sukuk papers using qualitative technique and empirical case study. Findings indicate the Medium Term Note (MTN) Sukuk program positively serves wealth safeguarding, contributing to human well-being and sustainable development. Recommendations suggest improving Shari’ah oversight for Sukuk formation.

The chapter of monography “Legislation on the Distribution of Financial Services in Selected EU Member States and the Innovative Way of Financial Intermediation in the Slovak Republic” by Sidak et.al. (2023) analysed the regulation of financial intermediation (because it has evolved dynamically over the last eleven years and has undergone numerous changes).

**METHODOLOGY**

This study employed a panel data regression model to ascertain the noteworthy economic drivers in GCC countries. In addition, we employed the EViews 12 software for analysis.

**Data**

The variables utilized in this study consist of both a cross-sectional element, encompassing 6 GCC countries, and a time-series element spanning from 1980 to 2023. Data were collected from the World Bank's database for all variables during the study period and the integration of data sources. Table 1 provides a summary of the variables.

**Table 1:** Variables employed in the panel data regression model and their anticipated impacts

<table>
<thead>
<tr>
<th>Nature</th>
<th>Variable</th>
<th>Characteristic</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable</td>
<td>LNGDP</td>
<td>Gross Domestic Product (GDP) (current US$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FDI</td>
<td>foreign direct investment, net inflows (balance of payments, current US$)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>POP</td>
<td>population, total</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>GDPpc</td>
<td>GDP per capita (current US$)</td>
<td>+</td>
</tr>
</tbody>
</table>
Independent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPENNESS</td>
<td>[import value index (2000 = 100) + export value index (2000 = 100)] / GDP</td>
<td></td>
</tr>
<tr>
<td>LNINF</td>
<td>Inflation, consumer prices (annual %)</td>
<td>-</td>
</tr>
<tr>
<td>LNREER</td>
<td>Real effective exchange rate index (2010 = 100)</td>
<td>+ / -</td>
</tr>
</tbody>
</table>

**Source:** The data shown here are sourced from the World Development Indicators' Data Bank provided by the World Bank (databank.worldbank.org/WDI)

**Descriptive analysis**

The study factors are described in Table 2. The table demonstrates that the set of panels utilized for GCC countries comprises 258 observations during the course of the year.

<table>
<thead>
<tr>
<th>Table 2: Descriptive Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>GDP</strong></td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Std. Dev.</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

**Model and estimation**

**Model**

The functional form of the model is as follows:

\[
GDP_t = f(FDI_t, INF_t, GDPpc_t, POP_t)
\]  

\[
GDP_t = \beta_0 + \beta_1 \times FDI_t + \beta_2 \times INF_t + \beta_3 \times GDPpc_t + \beta_4 \times POP_t + \epsilon_t
\]  

Where \( GDP_t \) is the gross domestic product, \( FDI_t \) is flows FDI percentage of GDP, \( INF_t \) is inflation, \( GDPpc_t \) is GDP per capita (current US$), \( POP_t \) is the population total, \( \beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \) are the parameters and \( \epsilon_t \) is the error term.

**Estimation**

The model was calculated using a three-stage approach, as outlined below:

1. **Estimation of Panel Data Model (None)**

By employing the general form of panel data analysis on GCC countries, without imposing time series restrictions or assuming randomness, it was discovered that foreign direct investment, individual and total population growth have a positive and significant influence on the economic growth of GCC countries. Conversely, inflation has a negative impact on growth. The findings are depicted in Equation 3 and Table 3:
\[ GDP_t = 3.125 + 12.253 \times FDI_t - 5.572 \times INF_t + 2.248 \times GDPpc_t + 19.015 \times POP_t + \epsilon_t \quad (3) \]

(0.021) (0.005) (0.046) (0.002) (0.007)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPPC</td>
<td>2.248</td>
<td>22.705</td>
<td>9.786</td>
<td>0.002</td>
</tr>
<tr>
<td>FDI</td>
<td>12.253</td>
<td>0.873</td>
<td>17.43</td>
<td>0.005</td>
</tr>
<tr>
<td>INF</td>
<td>-5.572</td>
<td>2.125</td>
<td>-2.842</td>
<td>0.046</td>
</tr>
<tr>
<td>POP</td>
<td>19.015</td>
<td>18.632</td>
<td>11.18</td>
<td>0.007</td>
</tr>
<tr>
<td>C</td>
<td>3.125</td>
<td>4.125</td>
<td>-0.785</td>
<td>0.021</td>
</tr>
</tbody>
</table>

R-squared 0.682
Adjusted R-squared 0.679
Prob (F-statistic) 0.001
Obs 258

Source: Output of EViews 12

2. Estimating a Panel Data Model with Fixed Periods

Estimating the model using panel data for GCC countries, with fixed time series, revealed a strong and positive influence of foreign direct investment, individual growth, and overall population growth on the economic growth of these countries. Furthermore, inflation has a detrimental effect on economic growth, as demonstrated by Equation 4 and Table 4:

\[ GDP_t = 1.72 + 15.63 \times FDI_t - 4.53 \times INF_t + 18.68 \times GDPpc_t + 16.99 \times POP_t + \epsilon_t \quad (4) \]

(0.05) (0.005) (0.002) (0.025) (0.015)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPPC</td>
<td>18.68</td>
<td>23.51</td>
<td>8.023</td>
<td>0.025</td>
</tr>
<tr>
<td>FDI</td>
<td>15.63</td>
<td>0.829</td>
<td>17.68</td>
<td>0.005</td>
</tr>
<tr>
<td>INF</td>
<td>-4.53</td>
<td>2.05</td>
<td>-2.44</td>
<td>0.002</td>
</tr>
<tr>
<td>POP</td>
<td>16.99</td>
<td>17.25</td>
<td>10.11</td>
<td>0.015</td>
</tr>
<tr>
<td>C</td>
<td>1.72</td>
<td>4.15</td>
<td>0.326</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Effects Specification

The period fixed (dummy variables)

R-squared 0.7296
Adjusted R-squared 0.717
Prob (F-statistic) 0.002
Obs 258

Source: Output of EViews 12
3. Estimating a Panel Data Model with Period Random Effects

Upon analyzing the panel data for GCC countries with random time series, it was discovered that foreign direct investment, individual growth, and total population have a noteworthy and favorable influence on the economic expansion of these nations. Furthermore, inflation has a detrimental effect on economic growth, as demonstrated by Equation 5 and Table 5.

\[ GDP_t = -3.18 + 15.05 \times FDI_t - 5.69 \times INF_t + 22.15 \times GDPPC_t + 20.03 \times POP_t + \varepsilon_t \]  

(5)

Table 5: Estimation of Panel Data Model (Period random effects)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPPC</td>
<td>22.15</td>
<td>21.56</td>
<td>10.159</td>
<td>0.001</td>
</tr>
<tr>
<td>FDI</td>
<td>15.05</td>
<td>0.831</td>
<td>18.103</td>
<td>0.001</td>
</tr>
<tr>
<td>INF</td>
<td>-5.69</td>
<td>1.95</td>
<td>-2.955</td>
<td>0.004</td>
</tr>
<tr>
<td>POP</td>
<td>20.3</td>
<td>15.25</td>
<td>11.614</td>
<td>0.003</td>
</tr>
<tr>
<td>C</td>
<td>-3.18</td>
<td>4.18</td>
<td>-0.814</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Effects Specification

<table>
<thead>
<tr>
<th>S.D.</th>
<th>Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period random</td>
<td>0.0001</td>
</tr>
<tr>
<td>Idiosyncratic random</td>
<td>0.6803</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.679</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.6803</td>
</tr>
<tr>
<td>Obs</td>
<td>258</td>
</tr>
</tbody>
</table>

Source: Output of EViews 12

To account for the potential impact of variations between nations on the dependent variable GDP, we utilize a fixed-effects least squares dummy variable approach. This method takes into consideration the differences among the 6 countries and allows each country to have its own intercept. Upon conducting the random-effects model estimation and the Hausman test, the null hypothesis was disproven (indicating that there is a difference between the REM technique and FELSDV model method), with a P-value of 0.002. Hence, the FELSDV approach surpasses the REM model method, as seen by the test results presented in Table 6.

Table 6: Test of Hausman

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period random</td>
<td>58.123</td>
<td>5</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Source: Output of EViews 12
The empirical section should provide appropriate citations to the methodology used. Paper's argument should be built on an appropriate base of theory, concepts, or other ideas. The research or equivalent intellectual work on which the paper is based should be well designed. Methods employed should be appropriate.

CONCLUSION AND DISCUSSION

This study employs the Panel data approach to analyze data from GCC countries over the period from 1980 to 2023. We discovered a favorable and substantial influence of foreign direct investment, as well as the expansion of both the individual and total population, on the economic advancement of GCC nations. Additionally, we observed an adverse effect of inflation on growth. The findings of this study can serve as a reliable basis for decision-makers in GCC countries to enhance their economies by implementing projects facilitated by the Islamic Development Bank. Researchers and academics might derive advantages from it and regard it as a study that introduces novel perspectives to the issue under investigation. Mameche and Masood (2021).

The Islamic Development Bank is a multilateral financial institution that operates in accordance with Islamic law. Its primary goal is to support member states in their efforts to achieve economic development and social progress, while also strengthening their ability to effectively address regional and global challenges. Over the course of several decades since its establishment, the organization has broadened the range of its activities and diversified its offerings. This has enabled it to deliver enhanced services to its member states that follow the Islamic faith, as well as to Islamic communities in non-member states. Nevertheless, this expansion has presented new obstacles due to the developmental issues encountered by these nations and the significant disparity in economic performance among different Islamic countries. Mameche, (2020).

The stark reality faced by Islamic nations, coupled with the establishment of the Islamic Development Bank as a means to address this situation by offering essential financing for development initiatives, undoubtedly prompts us to examine the role played by the Islamic Development Bank in promoting development in Islamic countries through diverse programs. Additionally, the Bank has offered many activities to Algeria, particularly as a founding member, in order to assist in the advancement of the development process between 1980 and 2020.’

This study has the potential to cover a wide range of elements. Further investigation should prioritize the execution of thorough evaluations on the various programs implemented by the IDB in GCC countries to determine their overall impact. This would require assessing the immediate and indirect impacts of these initiatives on many aspects of economic expansion, such as the rise of Gross Domestic Product (GDP), the creation of employment opportunities, the improvement of productivity, and the alleviation of poverty. Researchers could analyze the distribution of IDB projects across different sectors in GCC nations and examine how these initiatives have varying implications on economic growth. This would entail evaluating the impact of IDB-funded initiatives on critical sectors such as infrastructure development, education, healthcare,
agriculture, and renewable energy, among others. Future research should examine the extent to which IDB programs have mitigated regional differences in economic development across GCC countries Riache et al., 2020. This would involve analysing the spatial distribution of initiatives sponsored by the IDB and their impact on fostering equitable regional development.

Research might investigate the impact of IDB programs on enhancing financial inclusion and facilitating access to finance for SMEs and underprivileged people in GCC nations. This will require evaluating the efficacy of IDB initiatives, such as Islamic microfinance and SME financing programs, in promoting comprehensive economic growth. Furthermore, in relation to Innovation and technical Development, it would be worthwhile to assess the degree to which IDB programs have fostered innovation and technical advancement in GCC countries. This would entail assessing the impact of IDB-funded programs on research and development, the transfer of technology, and the use of innovative technologies in crucial economic sectors.

Assessing the Long-Term Viability and Ecological Consequences: Researchers have the potential to examine the sustainability and environmental consequences of IDB initiatives in GCC nations. This would entail evaluating the degree to which projects sponsored by the IDB comply with environmental criteria and advance sustainable development practices, such as the use of renewable energy, mitigation of climate change, and initiatives towards environmental conservation.

Regarding policy implications: Further investigation might also prioritize deriving policy implications from empirical studies on the impact of IDB initiatives on economic growth in GCC nations. The task at hand entails offering guidance to policymakers and development practitioners on how to optimize the beneficial effects of IDB initiatives on economic growth and sustainable development in the region.

Author Contributions:
Conceptualization, B.L. and F.C.; methodology, S. Riache.; software, B.L, S.Radukanov, N.P., S. Radukanov, N.P.; validation, B.L., S. Riache. and F.C.; formal analysis, B.L.; investigation, B.L., N.P; resources, S. Riache and N.P; data curation, B.L., S.Radukanov, N.P.; writing—original draft preparation, F.C.; writing—review and editing, S. Riache; visualization, F.C.; supervision, B.L.; project administration, S.R.; funding acquisition, F.C. All authors have read and agreed to the published version of the manuscript.

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FACTORS INFLUENCING CARBON EMISSIONS UNDER EKC SCHEME AND THE ROLE OF RENEWABLE ENERGY IN GULF COOPERATION COUNCIL COUNTRIES

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ABSTRACT

Objectives: In the face of the rising challenges of climate change, lowering emissions has become a key driver of environmental sustainability and sustainable growth. This study examines the validity of the Environmental Kuznets Curve (EKC) scheme for Gulf Cooperation Council (GCC) countries between 2000 and 2020 by considering different types of energy sources (total, non-renewable, renewable), urbanization, and trade openness.

Methods/Approach: Therefore, we consider the issue of cross-sectional dependency within panel data by testing its presence and employing the CIPS test to inspect the unit root. The Pedroni, Kao and Westerlund panel data cointegration tests have also been used to check the presence of long-run linkages. In addition, we apply the fully modified ordinary least squares (FMOLS), dynamic ordinary least squares (DOLS), and pooled mean group (PMG) techniques to explore the long-run dynamics between variables.

Results: First, it is observed that the EKC hypothesis is established in the case of six countries of GCC using CO2 emissions. Second, the direct connection between economic complexity and environmental degradation is obtained. Third, energy consumption seems also to be negative and significant. Fourth, urbanization and trade openness contribute to increase CO2.

Conclusions: Findings thus point to the fact that the promotion of energy contributes to reduce the harmful effect of economic complexity over dioxide carbon emissions as consequence of scale and composition effect. In this sense, the study suggests some noteworthy environmental policy implications to reduce the level of carbon dioxide emissions in Gulf Cooperation Council countries.

Keywords: GCC countries, Environmental quality, Renewable and non-renewable energy, EKC model, Panel Quantile Regression.

JEL classification: F18, F64, K32, P18, P28.

Paper type: Research article

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INTRODUCTION

The increasing concern about climate change has prompted a greater focus on environmental policies. In addition, the increase in CO2 emissions is a crucial factor in climate change (Saboori et al., 2012). However, it is essential to note that economic growth is closely tied to energy consumption, which leads to increased...
CO2 emissions. Nevertheless, recognizing the importance of economic development and sustainability has led to the adoption of renewable energy and low CO2 emission technologies (Kasperowicz, 2015). Hence, the significance of this study can be classified into empirical and practical dimensions. This research addresses the gap in previous literature by examining the relationship between energy consumption and CO2 emissions, explicitly focusing on scale and composition effects. In addition, this study provides valuable empirical insights for the Gulf Cooperation Council countries (GCC) region by examining the effects of urbanization and trade openness on environmental degradation.

This paper aims to validate the relevance of the Environmental Kuznets Curve (EKC) scheme by considering REC and NREC in GCC countries. This research highlights the effects of economic growth, energy consumption, trade openness, and urbanization on environmental degradation in GCC countries under an EKC scheme. Although numerous studies have examined the pattern of the EKC, there has been limited research on this topic for various energy sources. This research empirically diagnoses the long-term relationship between CO2 emissions and various factors in the Gulf Cooperation Council countries (Qatar, Saudi Arabia, Kuwait, United Arab Emirates, Oman). These factors include the consumption of energy sources (renewable and non-renewable), urbanization, trade openness, and income. New evidence is presented using various estimation techniques. The empirical part of the study utilizes various techniques to test for cross-section dependence, stationarity, cointegration, and long-run effects. The paper utilizes the fully modified ordinary least squares (FMOLS), dynamic ordinary least squares (DOLS), and pooled mean group (PMG) techniques. The study aims to provide robust empirical findings on the potential factors contributing to environmental degradation in GCC countries.

This analysis provides a fresh perspective on the connection between CO2 emissions and energy consumption in the GCC region, shedding light on the response under the EKC hypothesis. This study examines various energy sources in the GCC countries from 2000 to 2020, providing valuable insights into the patterns of EKC. This paper examines the relationship between EG, REC and NREC, urbanization, trade openness and CO2 emissions in GCC countries, providing valuable insights into long-term trends. This research delves into a range of crucial policies regarding environmental quality. Governments must prioritize the role of REC and trade openness in addressing environmental deterioration in these nations.

**LITERATURE REVIEW**

This section describes the linkage between each explanatory variable and carbon dioxide emissions.

**Economic growth and CO2 emissions**

Zhang et al. (2021) highlighted the possibility of achieving low CO2 emissions within an economic development. In developed countries, low-emission electricity is more affected by pollution, self-consciousness, and economic preference than less developed ones. Azam et al. (2016) discovered that well-thought-out policies are crucial in preventing pollution caused by supervisors in certain regions. Furthermore, the positive impact of reducing pollution will contribute to the promotion of sustainability and the well-being
of society. Based on the research presented, it is evident that the economy can be enhanced while minimizing CO2 emissions. However, the research findings of Goodness et al. (2017) specify that there is a positive correlation between EG and carbon dioxide emissions in the high-growth regime. This study challenges the hypothesis of the EKC and provides evidence that energy consumption significantly impacts CO2 emissions. According to Zou and Zhang (2020), there is a positive correlation between EG and carbon dioxide emissions. Hence, it can be concluded that GCC countries have the potential to achieve EG while keeping CO2 emissions low and optimizing energy consumption.

**Renewable and non-renewable energy and CO2 emissions**

Recent studies have extensively examined the impact of renewable energy on environmental quality. The study conducted by Whahedd et al. (2018) utilized the Autoregressive Distributed Lag model (ARDL) to examine the impact of REC, forest, and agriculture on CO2 emissions in Pakistan between 1990 and 2014. The analysis results indicate that a long-term reduction in CO2 emissions can be achieved by increasing REC. Bekun et al. (2019) utilized the pooled mean group-autoregressive distributive lag model (PMG-ARDL) across 16 countries of the EU. A negative linkage between REC and air pollution has been confirmed. Caglar (2020) highlighted the inverse correlation between renewable energy and carbon emissions in a study conducted across nine environmentally conscious nations. The bootstrap ARDL model was employed to analyze the data. The study conducted by Sulaiman et al. (2020) delved into the impact of REC, specifically wood biomass energy, on CO2 emissions. The study's findings ultimately concluded that using wood biomass energy negatively impacts the environment in the EU 27.

In a study conducted in SAARC countries from 2000 to 2014, Ikram et al. (2020) found a correlation between an increase in renewable energy and a decrease in CO2 emissions. The study conducted by Jebli et al. (2021) utilized the GMM system and Granger causality test as econometric methods to examine the relationship between REC and CO2 emissions in 120 nations. The findings revealed reduced CO2 emissions across different income classifications from 1990 to 2015. In a study conducted by Ponce and Khan (2021), they found that renewable energy and energy efficiency have a negative effect on CO2 emissions in nine developed countries. The study utilized the FMOLS method and analyzed data from 1995 to 2019. In a recent study, Kuladasheva and Salahodjaev (2022) examined the correlation between renewable energy and CO2 emissions in rapidly urbanizing countries. They employed a two-step system GMM estimator to analyze the data. Their research uncovered that renewable energy hurts CO2 emissions. The findings of Salahodjaev et al. (2022) and Sahoo et al. (2022) align with each other, as they both discovered similar results in Europe, Central Asian countries, and 14 developing Asian countries, respectively. Several studies have investigated the correlation between non-renewable energy and CO2 emissions, considering the impact of economic development. This research has been prompted by the alarming rise in CO2 emissions in recent decades. Balsalobre et al. (2018) emphasized the effectiveness of the energy strategy in reducing dependence on non-renewable energy sources. Non-renewable energy sources play a significant role in shaping the energy mix. The article thoroughly analyzes the long-term sustainability of both renewable and non-renewable energy sources.
sources.

**Trade openness and CO₂ emissions**

The importance of universal trade in stimulating sustainable environmental policies and mitigating ecological damage has been demonstrated by studies on international trade and trade policy rules (Leitão and Blaslobre-Lorente, 2020). The study conducted by Ali et al. (2016) examined the impact of trade openness on CO₂ emissions in Nigeria throughout 1971-2011, using the ARDL model. It was found that trade openness played a role in decreasing CO₂ emissions. Recent research focuses on the relationship between trade and environmental pollution. The impact of agricultural intra-industry trade on climate change in EU countries from 2000 to 2014 was investigated by Leitão and Balogh (2020) using fixed effects and the system. The econometric results indicate a negative relationship between intra-industry trade and CO₂ emissions. Leitão and Blaslobre-Lorente (2020) found that trade openness positively impacts the environmental system in the EU-28. They used various estimators such as panel FMOLS, panel DOLS, and the generalized method of moments system (GMM-System) to support their findings. The study by Karedla et al. (2021) analyzed the correlation between CO₂ emissions and trade openness in India from 1971 to 2016. The authors used the ARDL linked test method as the econometric strategy adopted. The results indicate a negative correlation between trade openness and carbon dioxide emissions. Adebayo et al. (2022) conducted a thorough study on the impact of trade openness on CO₂ emissions in Sweden. They employed a quantile-on-quantile regression approach and analyzed data from 1965 to 2019. The results indicate that trade openness significantly impacts reducing CO₂ emissions, particularly at lower and medium quantiles.

**Urbanization and CO₂ emissions**

Various studies have examined the connection between urbanization and CO₂ emissions. The dynamic causal linkage between urbanization and CO₂ emissions in Asian countries was tested by Yazdi and Dariani (2019) using the Pooled Mean Group (PMG) approach and panel Granger causality tests. They utilized a dataset from 1980 to 2014. It was revealed that urbanization leads to an increase in CO₂ emissions. Furthermore, a reciprocal causal connection exists between urbanization and CO₂ emissions in the East and Southeast Asian regions from 1971 to 2014. The long-term outcomes support the idea that urbanization positively impacts environmental quality, specifically in relation to CO₂ emissions. Behera and Dash (2017) achieved a comparable outcome by applying Perdroni and Westerlund's cointegration on data from Indonesia spanning from 1971 to 2014. The study by Musah et al. (2022) utilized advanced econometric techniques and panel causality analysis to examine the relationship between urbanization and CO₂ emissions in West Africa. Their findings suggest that urbanization significantly contributes to the rise in CO₂ emissions. Lee et al. (2022) examined the relationship between urbanization and greenhouse gas (GHG) emissions in 48 Belt and Road Initiative (BRI) economies from 1984 to 2017. They utilized panel quantile regression to analyze the data. The study's findings indicate a clear and significant correlation between urbanization and increased GHG emissions. The study by Erdoğan et al. (2022) focused on 15 African countries and analyzed data from
1990 to 2015. The analysis revealed that urbanization contributes to environmental degradation, posing a threat to the long-term sustainability of the environment.

**Hypotheses development**

Based on the literature review, the main hypotheses of this study are:

- **H1**: The EKC hypothesis is validated in GCC countries.
- **H2**: NREC increases CO₂ emissions.
- **H3**: REC reduces CO₂ emissions.
- **H4**: Urbanization increases CO₂ emissions.
- **H5**: Trade openness increases CO₂ emissions.

**DATA AND METHODOLOGY**

**Data and variables**

The paper analyzes panel data for the 5 GCC countries - Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates - from 2000 to 2020. The model takes into account carbon dioxide (CO₂) emissions, which are calculated in metric tons, as the dependent variable. The variables used in the study include per capita real Gross Domestic Product (GDP), total energy consumption (TEC), renewable energy consumption (REC), and non-renewable energy consumption (NREC). (v) Trade openness is measured by calculating the total imports and exports as a percentage of total GDP. (vi) The urbanization rate is determined by the urban population as a percentage of the total population. The variables are all converted into a logarithmic form.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Source</th>
<th>Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide emissions</td>
<td>Metric tons per capita</td>
<td>EIA</td>
<td>CO₂</td>
</tr>
<tr>
<td>Gross domestic product (GDP) per capita</td>
<td>Constant 2010 USD</td>
<td>WDI (2022)</td>
<td>GDP</td>
</tr>
<tr>
<td>Total energy consumption</td>
<td>Kg of oil equivalent</td>
<td>EIA</td>
<td>TEC</td>
</tr>
<tr>
<td>Renewable energy consumption</td>
<td>Kg of oil equivalent</td>
<td>EIA</td>
<td>REC</td>
</tr>
<tr>
<td>Non-renewable energy consumption</td>
<td>Kg of oil equivalent</td>
<td>EIA</td>
<td>NREC</td>
</tr>
<tr>
<td>Urbanization</td>
<td>Percentage of urban population to the total population</td>
<td>WDI (2022)</td>
<td>URB</td>
</tr>
<tr>
<td>Trade openness</td>
<td>Percentage of total trade (sum of imports and exports of goods and services) volume over GDP</td>
<td>WDI (2022)</td>
<td>TRADE</td>
</tr>
</tbody>
</table>

**Methodology**

The log-linear-based econometric model can be written as:

\[
\ln(\text{CO}_2)_{i,t} = \alpha_i + \beta_1 \ln(\text{GDP})_{i,t} + \beta_2 \ln(\text{GDP}^2)_{i,t} + \beta_3 \ln(\text{TEC})_{i,t} + \beta_4 \ln(\text{URB})_{i,t} + \beta_5 \ln(\text{TRADE})_{i,t} + \epsilon_{i,t} \tag{1}
\]
\[ \ln(CO_2)_{i,t} = \alpha_i + \beta_1 \ln(GDP)_{i,t} + \beta_2 \ln(GDP^2)_{i,t} + \beta_3 \ln(NREC)_{i,t} + \beta_4 \ln(URB)_{i,t} + \beta_5 \ln(TRADE)_{i,t} \]  
\[ + \epsilon_{i,t} \]  

**Specification 3**

\[ \ln(CO_2)_{i,t} = \alpha_i + \beta_1 \ln(GDP)_{i,t} + \beta_2 \ln(GDP^2)_{i,t} + \beta_3 \ln(REC)_{i,t} + \beta_4 \ln(URB)_{i,t} + \beta_5 \ln(TRADE)_{i,t} \]  
\[ + \epsilon_{i,t} \]

Where \( \beta_i (i=1,\ldots,5) \) is the vector of coefficients of independent variables, \( \epsilon_{i,t} \) is the normally distributed error term with normalized variance equal to one and mean zero. \( i \) and \( t \) represent the country and time dimensions, respectively.

We use a methodology of four steps:

- We test the presence of cross-sectional dependence using tests of Pesaran (2004), Baltagi et al. (2012), and the Lagrange Multiplier (Breusch and Pagan, 1980).
- We test the stationarity using first- and second-generation panel unit root tests: the IPS test developed by Im et al. (2003) and the cross-sectional IPS (CIPS) test developed by Pesaran (2007).
- We estimate the long-run effects using the FMOLS estimator proposed by Phillips and Hansen (1990) model, the DOLS model proposed by Stock and Watson (1993), and the PMG estimator proposed by Pesaran et al. (1999).

**RESULTS AND DISCUSSIONS**

Before starting the interpretation of the data, Table 1 displays descriptive statistics for each country. With the highest CO2 emissions in the sample, Saudi Arabia seems to be the most polluted country in the GCC region. Qatar has the highest GDP per capita, with $61736 per person. The United Arab Emirates appears to have the most open economy (trade openness = 142.805), with Saudi Arabia having the most closed economy (74.466). Saudi Arabia is the nation with the highest TEC. Conversely, Oman consumes the least energy of the GCC countries.

<table>
<thead>
<tr>
<th>Variables</th>
<th>KUWAIT</th>
<th>OMAN</th>
<th>QATAR</th>
<th>SAUDI ARABIA</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Std.</td>
<td>Mean</td>
<td>Std.</td>
<td>Mean</td>
<td>Std.</td>
</tr>
<tr>
<td>CO2</td>
<td>76.985</td>
<td>14.251</td>
<td>50.967</td>
<td>18.046</td>
<td>61.391</td>
</tr>
<tr>
<td>GDP</td>
<td>32707</td>
<td>5134</td>
<td>19712</td>
<td>1339</td>
<td>61736</td>
</tr>
<tr>
<td>TRADE</td>
<td>93.725</td>
<td>5.964</td>
<td>97.839</td>
<td>7.582</td>
<td>92.915</td>
</tr>
<tr>
<td>URB</td>
<td>99.948</td>
<td>0.218</td>
<td>77.009</td>
<td>5.167</td>
<td>98.142</td>
</tr>
<tr>
<td>REC</td>
<td>0.037</td>
<td>0.065</td>
<td>0.048</td>
<td>0.180</td>
<td>0.153</td>
</tr>
<tr>
<td>NREC</td>
<td>360.495</td>
<td>80.878</td>
<td>241.864</td>
<td>94.597</td>
<td>361.746</td>
</tr>
<tr>
<td>TEC</td>
<td>360.531</td>
<td>80.913</td>
<td>241.912</td>
<td>95.019</td>
<td>361.899</td>
</tr>
</tbody>
</table>
The cross-sectional dependency between the GCC nations is examined in the next phase because it might have an impact on the process of selecting the unit root tests. If not, an empirical evaluation might provide inaccurate findings. The results of these tests are shown in Table 3. Breusch Pagan LM tests and bias-corrected scaled LM tests assume that cross-sectional dependence is present for all variables at 1%. On the other hand, the Pesaran CD shows that a cross-sectional dependence is observed for CO2 emissions, urbanization and TEC, REC and NREC. Overall, the various tests of cross-sectional dependence strongly confirm the existence of cross-sectional dependence.

Table 3. Cross-section dependency tests

<table>
<thead>
<tr>
<th>Variables</th>
<th>Breusch Pagan LM</th>
<th>Bias-corrected scaled LM</th>
<th>Pesaran CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnCO2</td>
<td>106.400*** (0.000)</td>
<td>52.670*** (0.000)</td>
<td>9.859*** (0.000)</td>
</tr>
<tr>
<td>lnGDP</td>
<td>47.250*** (0.000)</td>
<td>19.990*** (0.000)</td>
<td>0.557 (0.550)</td>
</tr>
<tr>
<td>lnTRADE</td>
<td>46.750*** (0.000)</td>
<td>19.710*** (0.000)</td>
<td>0.521 (0.602)</td>
</tr>
<tr>
<td>lnURB</td>
<td>63.00*** (0.000)</td>
<td>28.690*** (0.000)</td>
<td>7.269*** (0.000)</td>
</tr>
<tr>
<td>lnREC</td>
<td>131.900*** (0.000)</td>
<td>66.730*** (0.000)</td>
<td>1.348 (0.178)</td>
</tr>
<tr>
<td>lnNREC</td>
<td>70.820*** (0.000)</td>
<td>33.010*** (0.000)</td>
<td>7.691*** (0.000)</td>
</tr>
<tr>
<td>lnTEC</td>
<td>135.900*** (0.000)</td>
<td>68.920*** (0.000)</td>
<td>11.540*** (0.000)</td>
</tr>
</tbody>
</table>

Notes: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.

Following the revelation of cross-dependency, Table 4 summarizes the result of the cross-sectionally augmented IPS (CIPS) of Pesaran (2007) and the Im-Pesaran-Shin (IPS) panel unit root proposed by Im et al. (2003).

Table 4. Panel unit root tests

<table>
<thead>
<tr>
<th>Variables</th>
<th>IPS test</th>
<th>CIPS test</th>
<th>IPS test</th>
<th>CIPS test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First differences</td>
<td>Level</td>
<td>First differences</td>
</tr>
<tr>
<td></td>
<td>Constant</td>
<td>Constant and trend</td>
<td>Constant</td>
<td>Constant and trend</td>
</tr>
<tr>
<td>lnCO2</td>
<td>-2.11</td>
<td>-0.09</td>
<td>-1.74</td>
<td>-1.41</td>
</tr>
<tr>
<td>lnGDP</td>
<td>-0.86</td>
<td>-1.19</td>
<td>-2.26</td>
<td>-2.50</td>
</tr>
<tr>
<td>lnTRADE</td>
<td>-1.49</td>
<td>-1.77</td>
<td>-1.45</td>
<td>-2.80</td>
</tr>
<tr>
<td>lnURB</td>
<td>-1.49</td>
<td>-1.43</td>
<td>-1.44</td>
<td>-2.26</td>
</tr>
<tr>
<td>lnREC</td>
<td>2.35</td>
<td>0.64</td>
<td>-1.96</td>
<td>-2.55</td>
</tr>
<tr>
<td>lnNREC</td>
<td>0.45</td>
<td>0.46</td>
<td>-1.78</td>
<td>-2.54</td>
</tr>
<tr>
<td>lnTEC</td>
<td>-1.27</td>
<td>0.43</td>
<td>-1.77</td>
<td>-2.53</td>
</tr>
</tbody>
</table>

Notes: ** represents the 5% significance levels.

As shown, the IPS and CIPS unit root tests indicate that all variables are not stationary at levels (in models with a constant and with a constant and a trend). On the other hand, all variables are stationary at the 5% level when taken at first differences. Consequently, all series are integrated of order one.

Since all series are stationary at first differences, the test of cointegration may now be used to determine if
the variables of interest have long-term cointegrated relationships. Therefore, various cointegration tests: Pedroni, Kao, and Westerlund are used to determine the potential long-run equilibrium relationship. The cointegration results are shown in Table 5.

Table 5. Panel cointegration tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Eq. 1: TEC</th>
<th>Eq. 2: NREC</th>
<th>Eq. 3: REC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistics</td>
<td>p-value</td>
<td>Statistics</td>
</tr>
<tr>
<td>Pedroni</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified Philips-Perron t</td>
<td>1.240</td>
<td>0.105</td>
<td>1.260</td>
</tr>
<tr>
<td>Philips-Perron t</td>
<td>-5.310***</td>
<td>0.000</td>
<td>-5.270***</td>
</tr>
<tr>
<td>Augmented Dickey-Fuller t</td>
<td>-3.610***</td>
<td>0.000</td>
<td>-3.620***</td>
</tr>
<tr>
<td>Kao</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified Dickey-Fuller t</td>
<td>-6.010***</td>
<td>0.000</td>
<td>-6.100***</td>
</tr>
<tr>
<td>Dickey-Fuller t</td>
<td>-4.000***</td>
<td>0.000</td>
<td>-4.050***</td>
</tr>
<tr>
<td>Augmented Dickey-Fuller t</td>
<td>-3.540***</td>
<td>0.000</td>
<td>-3.610***</td>
</tr>
<tr>
<td>Unadjusted modified</td>
<td>-6.000***</td>
<td>0.000</td>
<td>-6.080***</td>
</tr>
<tr>
<td>Dickey-Fuller t</td>
<td>-4.000***</td>
<td>0.000</td>
<td>-4.050***</td>
</tr>
<tr>
<td>Westerlund</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance ratio</td>
<td>-3.170***</td>
<td>0.000</td>
<td>-3.160***</td>
</tr>
</tbody>
</table>

The table shows that the different cointegration tests strongly reject the null hypothesis of no cointegration for all specifications. There is therefore a long-term relationship between CO₂ emissions, GDP per capita, urbanization, trade openness, and TEC (Eq. 1), NREC (Eq. 2), and REC (Eq. 3). In other words, the different explanatory variables have significant long-run relationships with CO₂ emissions in GCC countries. This finding is robust since the different cointegration tests and specifications have shown it. Consequently, we will search for the long-term effects of these variables on CO₂ emissions. We arrive at this by estimating the low level of regression based on FMOLS, DOLS, and PMG techniques, as shown in Table 6. The estimation results for the cases where the TEC, NREC, and REC are introduced in the analysis are presented.

Table 6. Regression test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Eq. 1: TEC</th>
<th>Eq. 2: NREC</th>
<th>Eq. 3: REC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>p-value</td>
<td>Coef.</td>
</tr>
<tr>
<td>lnGDP</td>
<td>2.558***</td>
<td>0.000</td>
<td>2.578**</td>
</tr>
<tr>
<td>lnGDP_SQ</td>
<td>-0.123***</td>
<td>0.000</td>
<td>-0.124***</td>
</tr>
<tr>
<td>lnTRADE</td>
<td>0.015</td>
<td>0.550</td>
<td>0.016</td>
</tr>
<tr>
<td>lnURB</td>
<td>0.626***</td>
<td>0.000</td>
<td>0.634**</td>
</tr>
<tr>
<td>lnTEC</td>
<td>0.785***</td>
<td>0.000</td>
<td>0.785***</td>
</tr>
<tr>
<td>lnNREC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnREC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As shown, GDP has a positive coefficient in all models using the three estimation techniques (FMOLS, DOLS, PMG). Therefore, EG increases CO₂ emissions. In addition, GDP squared has a negative coefficient in all cases. Thus, EG will reduce CO₂ emissions in the early stages of development. Consequently, the findings indicate that the GCC countries show an inverse U-shaped relationship between EG and environmental degradation. Therefore, the EKC hypothesis is supported by all models, confirming many previous studies.

Based on estimates from the FMOLS, a 1% increase in GDP per capita corresponds to a rise in CO₂ emissions by 2.558% (Eq1), 2.578% (Eq. 2) and 0.644% (Eq. 3). In addition, the DOLS indicates that a 1% increase in GDP per capita corresponds to a rise in CO₂ emissions by 3.310% (Eq. 1), 3.276% (Eq. 2) and 2.763% (Eq. 3). However, squared GDP per capita shows a statistically significant negative coefficient in all specifications, indicating that the influence of EG is no longer positive at a certain point. In summary, the EKC hypothesis is supported by all specifications: TEC, REC, and NREC.

The empirical result shows that as TEC increases by 1%, CO₂ emissions increase by 0.785% (FMOLS), 0.707 (DOLS), and 0.759 (PMG). The findings of this study reveal the detrimental impact of energy consumption on environmental quality in GCC countries. On the other hand, sustained use of renewable energy lowers CO₂ emissions per person. Nevertheless, elasticity is still relatively low (ranging from -0.05% to -0.08%). The impacts of NREC on CO₂ emissions are similar to those of TEC, given that the energy mix in GCC countries is dominated by non-renewable energy sources. These findings align with many studies on GCC countries, such as Zmami and Ben-Salha (2020). NREC is found to be harmful to environmental quality in the long-run. When moving to renewable energy sources, the analysis shows that they have positive and
significant coefficients in all cases, which means that REC reduces CO2 emissions in GCC countries. These results are expected since renewable energy sources have no detrimental environmental effects.

The trade openness coefficients are negative, which means that trade improves environmental quality in GCC countries. In addition, the empirical research suggests that more open economies produce lower CO2 emissions. This result may be explained by the fact that more open economies have the opportunity to import green technologies and achieve carbon neutrality to address climate change and environmental damage. Increased openness also leads to greater competitiveness, technological efficiency, and easier access to the global market. This is contingent upon countries being motivated to import cleaner and more innovative technologies to mitigate environmental degradation. Finally, there is a positive correlation between urbanization and environmental quality, suggesting that rising urbanization increases CO2 emissions in the long-run. Indeed, GCC countries have shown a rapid urbanization process in the last decades. The environment in urban regions is worsened by the rapid growth in energy consumption caused by urbanization, which in turn increases CO2 emissions.

CONCLUSIONS

This study examines the validity of the EKC hypothesis in GCC countries between 2000 and 2020. The originality of the study is that it verifies the EKC by considering various energy sources, such as TEC, REC and NREC. The study uses different panel models including FMOLS, DOLS and PMG.

Thus, this investigation focuses on environmental protection and its effects on sustainability and economic and social development. These research findings confirm the previous research results (Toukabri, 2023, 2022 and Erdoğan et al., 2022).

The results show that GDP per capita has a positive impact on CO2 emissions, while the square of GDP per capita has a negative impact on emissions. Therefore, the study concludes the validity of the EKC hypothesis in GCC countries. In addition, TEC has a harmful impact on the environment. These results are also confirmed by the NREC, which has a negative impact on the environment. Finally, REC reduces CO2 emissions and protects the environment. Additionally, trade openness has a negative coefficient, meaning that more open economies can reduce CO2 emissions in the long term through imports of green technologies. Finally, urbanization degrades the environment by increasing energy consumption, increasing waste production and imposing pressure on the environment in cities with large populations.

This research is therefore of major interest for the preservation of the life of human beings and its commitment to future generations, the ethical implication of consumption and production as well as its social responsibility (Toukabri and Toukabri, 2023, Toukabri and Ghali, 2020 and Toukabri and Gharbi, 2022).

As a conclusion, we can deduct from this research that social development and economic growth can be achieved through respect for the environment. Environmental protection and the reduction of CO2 emissions are attained through the implementation of strategies based on renewable energies in industry, transport, commerce and trade.
This study is useful and has several uses in academic and managerial practices. This paper provides decision makers in the public and private sectors with valuable implications for environmental sustainability. Indeed, this research recommends reducing CO2 emissions by proposing environmental strategies in GCC countries. To achieve this, it is necessary for GCC countries to rationalize their energy consumption and improve their energy efficiency. Furthermore, the promotion of renewable energy sources is of paramount importance to achieve long-term environmental sustainability.

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Conceptualization, M.T. and M.C.; methodology, M.T. and M.C.; software, M.T. and M.C.; validation, M.T. and M.C.; formal analysis, M.T. and M.C. and K.G.; investigation, M.T. and M.C. and K.G.; resources, M.T. and M.C. and K.G.; data analysis, M.T. and M.C. and K.G.; writing - original draft preparation, M.T.; writing - review and editing, M.T. and M.C.; supervision, M.T. and M.C.; project administration, M.T. and M.C.; funding acquisition, M.T. All authors have read and agreed to the published version of the manuscript.

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MACROECONOMIC DETERMINANTS OF POVERTY IN SOUTH AFRICA: THE ROLE OF INVESTMENTS IN ARTIFICIAL INTELLIGENCE

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ABSTRACT

Objectives: This study marks a departure from conventional research that predominantly focuses on AI's impact on economic growth. Instead, it uniquely centers on the interplay among fiscal policy, AI investment, monetary policy, and poverty alleviation in South Africa, a nation recognized for its extreme income inequality. In doing so, this research distinguishes itself from the prevailing macro-level studies by scrutinizing the intricate relationship between artificial intelligence, poverty, monetary policy, and fiscal policy, particularly within the South African context.

Methods/Approach: It employs the Prais-Winsten model and other econometrics diagnostics for the empirical analysis.

Results: The findings reveal that government expenditure on education and investments in artificial intelligence only stimulate household consumption and, therefore, reduce poverty when they are interacted. A one-unit rise in the interaction term increases household consumption by 0.031. Additionally, a unit increase in government national expenditure and broad money growth results in a 0.007 and 0.014 decrease in poverty, respectively. Similarly, gross capital formation positively affects household consumption, thereby reducing poverty in the country by 1.022 due to a one-point increase. In general, taxes on goods and services and the repo rates exert a non-statistically significant effect on the level of poverty in the country.

Conclusions: To effectively address these findings, it is imperative to conduct a thorough evaluation of government spending on education to ensure prudent resource allocation and prevent the mismanagement of public funds.

Keywords: Artificial Intelligence, Household consumption, Government expenditure, money supply

JEL classification: E52, H3, H5, I3, O3

INTRODUCTION

Characterizing developing economies is the prevalence of low living standards among their citizens. For example, according to Statistics South Africa (Stats SA) in 2017 and Trading Economics in 2018, as cited in Musara et al. (2020), South Africa, despite being one of Africa's largest economies, continues to grapple with high unemployment rates, reaching 26.7% in the fourth quarter of 2017, with youth unemployment at 52.20%. Poverty and inequality further afflict the country, reflected in a Gini coefficient of 0.69 (World Bank, 2017), as cited in Musara et al. (2020). In 2015, approximately 736 million individuals lived below the global poverty line of US$1.90/day. By 2018, approximately 8% of workers and their children were living on less than US$1.90 per individual per day globally. Additionally, about 10% of the global population struggles to access basic needs such as education, health, sanitation, and clean water (United Nations, 2020), as cited in Solarin...
The United Nations' Sustainable Development Goal 17 for 2030 prioritizes the eradication of poverty in all its forms (Griggs et al., 2013), as cited in Zhou & Liu (2022). Africa has been described as the global last frontier in the fight against extreme poverty (Hamel et al., 2019). According to STATS SA 2018, cited in Dunga (2019), over half of South Africa's population lives in poverty. Dunga (2019), citing STATS SA (2018) and based on a report covering the period 2006 to 2015, states that 30.4 million individuals, or 55.5% of the population, live in poverty. This is an increase from 53.2% or 27.3 million individuals reported in 2011. Various factors contribute to poverty in Africa, including income inequality, geographic location, conflicts, natural disasters, and inheritance of poverty, ill health, disability, gender discrimination, education, and skills (Kabuya, 2015). Africa, the world's second-most populous continent with 1.3 billion people, is predominantly composed of youth, constituting a significant portion of the global population at 16.72%. Economic growth in Africa has shown variation, with an average real output growth of 1.8% annually from 1980 to 1989, 2.6% from 1990 to 2000, and a significant increase to 5.3% from 2000 to 2010 (UNCTAD, 2014). The exponential growth in technology and its impact on industries can influence productivity, employment, poverty levels, and overall living standards. For instance, Harari (2018) emphasizes the importance of skills like critical thinking, collaboration, communication, and creativity in the age of technology. The combination of these skills can expedite productivity and alleviate poverty. The Fourth Industrial Revolution (4IR) is expected to enhance productivity across industries, but it also poses challenges, particularly in developing countries like those in Sub-Saharan Africa. The rapid technological advancements of the 4IR have raised concerns about job displacement and skills gaps (Naudé, 2017; World Economic Forum Africa, 2016). The fear of job loss due to technological advancement has been a major concern globally (Shank, 2016), as cited in Shava & Hofisi (2017). In parallel with these global trends, upper-income economies have seen accelerated innovation and technological change (Signé, 2022).

Growth theories, including neoclassical, classical, and endogenous growth theory, all underscore the role of technology in a nation's development. Advanced technology can internalize the law of diminishing returns (Jeffrey, 2013; Oyewale & Osadola, 2018). The continuous technological revolution worldwide has the potential to accelerate productivity and improve living standards, although its impact on employment may vary. To this end, can South Africa effectively utilize investment in artificial intelligence to significantly reduce poverty? How effective is the government's fiscal policy in poverty reduction? Investing in Artificial Intelligence (AI) raises questions about its potential to impact poverty through various channels: (i) AI investment can create jobs in fields like AI research, software development, data science, and administration, reducing unemployment and alleviating poverty (OECD, 2021); (ii) AI boosts productivity in sectors like manufacturing, healthcare, and agriculture, spurring economic growth, higher wages, and improved living standards (Ernst, 2022); (iii) AI fosters innovation and competitiveness, making businesses more profitable, generating tax revenue for poverty reduction (Lu, 2021); (iv) AI education equips individuals with job-relevant skills, enhancing employability and income, reducing poverty risk (Mena-Guacas et al., 2023). Fiscal policy, managed by governments, involves taxation and public spending to shape economic conditions. It can directly
impact poverty through targeted social spending, like welfare programs and public health services, helping vulnerable populations. Tax policies can also redistribute wealth, ensuring the affluent pay more, reducing income inequality. Additionally, government investment in education and job training can enhance skills, employability, and income for citizens, lifting them out of poverty. Moreover, well-executed fiscal policies can stimulate economic growth, generating more job opportunities and increasing overall income levels, which in turn can alleviate poverty. Fiscal policy, managed by governments, involves taxation and public spending to shape economic conditions. It can directly impact poverty through targeted social spending, like welfare programs and public health services, helping vulnerable populations (Jouini et al., 2018). Tax policies can also redistribute wealth, ensuring the affluent pay more, reducing income inequality (Jouini et al., 2018). Additionally, government investment in education and job training can enhance skills, employability, and income for citizens, lifting them out of poverty (Mokoena and Mazenda, 2023). Moreover, well-executed fiscal policies can stimulate economic growth, generating more job opportunities and increasing overall income levels, which in turn can alleviate poverty.

This study contributes to the empirical literature by examining the impact of artificial intelligence, as a technology of the 4IR, on the achievement of Sustainable Development Goal 1, considering the macroeconomic role of fiscal policy in South Africa over the period 2016q1 to 2022q1. Given the limited empirical studies on the impact of artificial intelligence, this research extends the existing literature by using quarterly transformed time series data to quantify the effect of artificial intelligence investments on poverty in South Africa. The study's empirical findings provide quantitative insights, complementing the predominantly qualitative approach found in academic literature. Additionally, the research offers policy recommendations for the South African government regarding the use of fiscal policy and artificial intelligence investments as measures for poverty reduction in the economy.

The organization of this paper is as follows: Section 2 presents the literature review. Section 3 presents the methodology and data. Results from the empirical analysis are presented and discussed in Section 4, while finally, Section 5 concludes the study.

**LITERATURE REVIEW**

This section compiles pertinent theoretical explanations and empirical studies related to this research.

**2.1 Theoretical Review**

*The Classical and Neoclassical Theory*

The concept of poverty is a development issue having varying conceptual measures. The study of Davis (2014) provides some information on the classical perspective of poverty. According to the theory, it is assumed that efficiency characterizes the exchanges that occur in the market, implying that wages reflect individual output. Poverty is therefore observed as the outcome of choices of individuals which undermines productivity. “Poverty or welfare” trap may arise due to the “wrong” choices of individuals. It was asserted that the intervention of state is an avenue for economic inefficiency in the scenario beyond a minimum level to avoid
destitution; by creating misaligned incentives between poor persons and the generality of a society, programs that are welfare based have the possibility of resulting in the reinforcement of penury. It was observed that most of the policy prescriptions in this context concentrates on efforts to promote productivity of impoverished persons towards making them to participate in the labour force while certain persons in the class of the young, the old, the sick cannot join, and alternative assistance would be needed.

The neoclassical perspective establishes a connection between ICTs and the participation of vulnerable groups in viable economic activities (Kwan & Chiu, 2015). According to Ofori et al. (2021), this theory contends that ICTs play a vital role in helping low-income economies transition out of persistent poverty, as evidenced by the experiences of economies like China, Hong Kong, and Japan. Davis and Sanchez-Martinez's study (2015) further expands on neoclassical theories, offering a broader scope that considers factors contributing to poverty beyond individuals' control. These factors encompass the depletion of social and private assets, obstacles to education, employment challenges faced by single-parent households, immigrant status, market failures that exclude the impoverished from accessing credit markets, leading to seemingly irrational choices, and health deterioration alongside aging.

**Keynesian/Neoliberal**

As evident from Davis and Sanchez-Martinez's study (2015), the neoliberal ideology, led by the new-Keynesians, shares a focus on individual-oriented perspectives regarding poverty. However, the distinctive feature lies in the emphasis placed on the government's role, which leads to a heightened focus on public goods and inequality. According to these authors, this perspective implies that achieving a more equitable income distribution could facilitate the inclusion of disadvantaged individuals in essential activities within the broader context of poverty.

Further insights into Keynesian philosophy were derived from Alamanda's research (2020), which delves into the Keynesian theory of employment, interest, and money, shedding light on the intricate relationship between income inequality, poverty, and government expenditure. According to Keynesian philosophy, government intervention can enhance the prospects of attaining a crucial equilibrium among saving, consumption, and investment. Alamanda (2020) observed that the level of employment, a pivotal factor in assessing income inequality, hinges on the demand for goods and services. Citing Stack (1978), Alamanda (2020) highlighted that "demand is a function of the relative propensity to consume and the propensity to save. If the amount of money saved by income recipients is greater than the amount required by those responsible for investment, then total demand will be insufficient to sustain full employment.” Consequently, excessive saving is deemed detrimental to an economy as it curtails job creation, leading to unemployment and exacerbating income inequality (Stack, 1978).

According to Alamanda (2020), this theory implies that government participation in an economy can contribute to a reduction in income inequality and poverty through three channels. Firstly, the nature of government expenditure can mitigate obstacles and enhance the living standards of impoverished households. Secondly, increased job opportunities resulting from public works projects reduce unemployment,
subsequently lowering inequality and poverty levels. Lastly, the multiplier effects of programs promoting job creation have the potential to stimulate economic activities and a cascade of reinvestments.

2.2 Empirical Review

Many economists in developing economies view the prospects of the fourth industrial revolution (Thailand Board of Investment, 2017) as influenced by the earlier adoption of this revolution by advanced economies like the UK, USA, South Korea, and China (Ciszewska-Mlinaric, 2009). While industrial growth occurred in Great Britain and continental Europe in the eighteenth and nineteenth centuries, Africa mainly focused on generating agricultural items and raw materials such as rubber, cocoa, coffee beans, sugar cane, cotton, tobacco, copper from Northern Rhodesia, and gold and diamonds from South Africa (Amin, 1972). Many Sub-Saharan African countries heavily rely on rain-fed agriculture and primary activities (Adekunle et al., 2016; Bachewe et al., 2018). The adoption of technology and the utilization of technical progress are significant drivers of output growth in most developed economies, leading to substantial advancements in social and economic development (World Economic Forum, 2017). Observers and analysts widely agree that fourth industrial technologies hold significant promise for stimulating ongoing economic growth and development processes in Africa (Banga et al., 2020; Signé, 2022).

According to a World Bank (2018) report cited in Dunga’s work (2019), although extreme poverty levels appear to have declined, the problem has shifted and concentrated in specific regions. Dunga (2019) highlights that poverty levels have risen in sub-Saharan Africa. Between 1990 and 2015, the number of individuals living in extreme poverty increased from 278 million to 413 million, making the region home to more extremely poor individuals than the rest of the world combined. Prisecaru (2016) observes that the digitalization stemming from the Fourth Industrial Revolution exacerbates global inequalities, particularly affecting weaker and poorer states, which struggle to adapt to these technological changes from the second and third industrial revolutions. Mesnard (2016) suggests that revolutionary technologies that dramatically transform industrial production can put employment at risk, as the Fourth Industrial Revolution may lead to reduced demand for labor or necessitate new educational prerequisites. Borg (2016) argues that widespread changes in technical capabilities in areas such as digitalization, connectivity, big data, and robotics could disrupt labor markets significantly. The World Bank (2018) further emphasizes the shifting nature of poverty despite reductions in extreme poverty levels.

Zahonogo (2017) applies the system GMM technique to a panel of 42 Sub-Saharan African economies spanning from 1980 to 2012. He finds that financial development contributes to a reduction in poverty, with a specific threshold level of 1.19% necessary for financial development to have a significant impact on poverty. Mumtaz and Ali (2022) examines the impact of exchange rates and their volatility on domestic consumption in India and Pakistan, covering the period from 1980 to 2018. They find that a rise in real exchange rates stimulates consumption, while a rise in nominal exchange rates decreases consumption in India. Mushtaq and Bruneau (2019) analyzed the role of ICT in poverty alleviation using a panel of 61 countries from 2001 to 2012. They find that financial inclusion facilitates the impact of ICT diffusion in reducing poverty and
inequality. Recently, financial technology has emerged as a significant tool for reducing poverty and driving domestic economic development (McKinsey Global Institute, 2016, as cited in Bateman et al., 2019).

The McKinsey Global Institute (2016) employs McKinsey's proprietary general equilibrium macroeconomic model and predicts that digital finance could boost GDP levels in emerging economies by 6%, or $3.7 trillion, by 2025. To achieve this, emerging markets must stimulate digital payments at a rate equal to that of the top quartile of advanced economies over the long term and ensure that 91% of adults have access to financial services, on average. Ofori et al. (2021) investigates the impact of ICT diffusion and financial development on poverty reduction in SSA using data spanning from 1980 to 2019. They employ dynamic system GMM and panel corrected standard errors and find that, unlike financial access, ICT usage, access, and skills have a pronounced impact on reducing both the severity and intensity of poverty. This impact is further enhanced when there is strengthened financial development. Batrancea et al. (2021) analyze the determinants of economic growth across seven economies from 1990 to 2019. They find that economic growth is significantly affected by the bank capital-to-assets ratio. Rami Reza et al. (2017) identifies a causal and declining effect of property tax revenues on poverty headcount ratio and gap, with considerable spillovers across municipalities. Mehmood and Sadiq (2010) examine government expenses on poor individuals from 1976 to 2010 and find that government expenditures have a negative and significant impact on poverty. Kazungu and Cheyo’s (2014) study examines the impact of government expenses on strategic growth and poverty reduction in Tanzania from 2005 to 2013. They found that government expenditures aimed at stimulating growth do not necessarily lead to poverty reduction, as these expenses are often concentrated on social investments. Oriawote and Ukawe (2018) investigates the impact of government expenditure on poverty reduction in Nigeria from 1980 to 2016. Their analysis, using the ECM model and cointegration techniques, suggests that government expenditure on health and education positively affects per capita income, albeit with low elasticity. Meanwhile, government expenditure on building and construction also has a direct and significant effect on per capita income, albeit with low elasticity. The study finds no evidence of causation between government expenditure on health and education. In many African economies, particularly in Sub-Saharan Africa, low employment transformation and widespread informal employment are prevalent (Fox et al., 2020, as cited in Fox and Signé, 2021).

Nuru and Zeratsion (2022), identified shocks to government spending using a vector autoregression model based on Cholesky identification. Their study found that shocks to government spending had a direct and significant impact on labor share in the first quarter.

The research presented in this section reveals a critical gap in the existing literature as it provides information on the interactive impact of investments in artificial intelligence and government expenditure on education on poverty in South Africa. To the best of our knowledge, no such empirical interaction has been observed in the specific context of South Africa between 2016q1 and 2022q1. Therefore, to address this research gap and contribute to the body of knowledge in this area, this study employs the Prais-Winsten AR(1) regression which takes care of the problem serial autocorrelation and heteroscedasticity in the error terms. The
primary aim of this research is to provide policy recommendations that can assist South Africa in achieving the Sustainable Development Goal (SDG) of poverty eradication.

METHODOLOGY

3.1 Empirical strategy

The empirical strategy that was employed in this study includes descriptive analysis, unit root test, matrix of correlations, normality indicators, Cusum stability test, and the Prais-Winsten Regression Model. The Prais-Winsten model becomes appropriate for this study considering its robustness in empirical estimation. For instance, according to Anarfo et al. (2017), Prais-Winsten estimation helps to eliminate the incidence of autocorrelation of type AR(1) in a linear model as well as heteroscedasticity in the error terms, mostly for time series regression analysis. The Prais-Winsten model is a modification of Cochrane-Orcutt model because it does not forfeit the first observation, thus creating more efficiency, reflecting a special scenario of feasible generalized least squares.

3.1 Empirical model specification

In order to empirically investigate the relationship between poverty and fiscal policy in South Africa, given investments in artificial intelligence, the following functional relation is specified

\[ lhfc = f(pge, lgai, tgs, gne, bmg, repo, lgcf, aie) \]  

(1)

Subsequently, the econometric model takes the following:

\[ lhfc = \alpha_0 + \alpha_1 pge + \alpha_2 lgai + \alpha_3 tgs + \alpha_4 gne + \alpha_5 bmg + \alpha_6 repo + \alpha_7 lgcf + \alpha_8 aie + \epsilon_t \]  

(2)

3.2 Data

We collected annual time series data from four sources: The World Development Indicators (WDI), the Organization for Economic Cooperation and Development (OECD) database, the South African Reserve Bank (SARB) and the African Development Bank (AFDB). Specifically, data on the percentage of GDP spent on education (pge), household final consumption expenditure (lhfc), and gross capital formation (lgcf) were obtained from the AFDB. Additionally, data on investments in artificial intelligence (lgai) was obtained from the OECD, while taxes on goods and services (% of revenue) (tgs), broad money (% of GDP) (bmg) and Gross national expenditure (% of GDP) (gne) were obtained from the WDI. A missing data point for 2022 in respect of tgs was obtained through interpolation before quarterly transformation. Studies that have used this technique include those of Saba and Ngepah (2019, 2022a, 2022b, 2022c). Finally, repo rates were obtained from the SARB. The central focus of the study, among others, is to evaluate the effect of investments in artificial intelligence on the poverty level in South Africa. Consequently, the data sets across the variables were selected based on the data availability on investments in artificial intelligence in which South Africa has data running from 2016. Therefore, data covers the period from 2016 to 2022. However, given the limited range of data, a quarterly transformation of all the variables was done through the use of e-views, which resulted in 25 observations each.
EMPIRICAL RESULTS AND DISCUSSION

Table 1 presents the summary statistics for the variables under consideration. The series of lhfc, pge, lgai, tgs, gne, bmg, repo, lgcf and the interaction term, aie exhibit the mean of 11.381, 5.987, 7.691, 33.414, 97.758, 68.785, 5.73, 10.748 and 46.179 respectively. The variables' minimum and maximum values range between 3.5 and 99.549, respectively. Skewness analysis reveals that all the variables are negatively skewed except pge and bmg. Among the negatively skewed distribution, lhfc, tgs, gne, repo, lgcf and aie are relatively normally distributed as well as the positively skewed variables of pge and bmg.

Table 2 presents the results of the unit root tests for all the variables under investigation. This step is crucial in empirical studies to prevent the issue of spurious regression. The study specifically utilized the Augmented Dickey-Fuller test (ADF) evaluated on the basis of the constant option. Upon examination of the table, the variables exhibit a combination of the I (1) and I (0) series, and the variables are therefore relevant for examining the relationship between artificial intelligence and poverty in South Africa.

Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>p1</th>
<th>p99</th>
<th>Skew.</th>
<th>Kurt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lhfc</td>
<td>25</td>
<td>11.381</td>
<td>.032</td>
<td>11.311</td>
<td>11.416</td>
<td>11.311</td>
<td>11.416</td>
<td>-.713</td>
<td>2.284</td>
</tr>
<tr>
<td>pge</td>
<td>25</td>
<td>5.987</td>
<td>.404</td>
<td>5.444</td>
<td>6.562</td>
<td>5.444</td>
<td>6.562</td>
<td>.259</td>
<td>1.551</td>
</tr>
<tr>
<td>lgai</td>
<td>25</td>
<td>7.691</td>
<td>.484</td>
<td>6.146</td>
<td>8.332</td>
<td>6.146</td>
<td>8.332</td>
<td>-1.309</td>
<td>5.268</td>
</tr>
<tr>
<td>tgs</td>
<td>25</td>
<td>33.414</td>
<td>.509</td>
<td>32.436</td>
<td>34.167</td>
<td>32.436</td>
<td>34.167</td>
<td>-.447</td>
<td>2.08</td>
</tr>
<tr>
<td>gne</td>
<td>25</td>
<td>97.758</td>
<td>1.903</td>
<td>94.119</td>
<td>99.549</td>
<td>94.119</td>
<td>99.549</td>
<td>-.649</td>
<td>1.834</td>
</tr>
<tr>
<td>bmg</td>
<td>25</td>
<td>68.785</td>
<td>1.903</td>
<td>94.119</td>
<td>99.549</td>
<td>94.119</td>
<td>99.549</td>
<td>-.649</td>
<td>1.834</td>
</tr>
<tr>
<td>repo</td>
<td>25</td>
<td>5.73</td>
<td>1.482</td>
<td>3.5</td>
<td>7</td>
<td>3.5</td>
<td>7</td>
<td>-.723</td>
<td>1.634</td>
</tr>
<tr>
<td>lgcf</td>
<td>25</td>
<td>10.748</td>
<td>.056</td>
<td>10.622</td>
<td>10.816</td>
<td>10.622</td>
<td>10.816</td>
<td>-.529</td>
<td>2.327</td>
</tr>
<tr>
<td>aie</td>
<td>25</td>
<td>46.179</td>
<td>5.549</td>
<td>33.461</td>
<td>54.678</td>
<td>33.461</td>
<td>54.678</td>
<td>-.136</td>
<td>2.428</td>
</tr>
</tbody>
</table>

Source: Authors’ computation

Table 2. Unit root test results

<table>
<thead>
<tr>
<th>Series</th>
<th>Levels</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pge</td>
<td>-1.846** (0.0412)</td>
<td></td>
</tr>
<tr>
<td>Lhfc</td>
<td>-2.639*** (0.0083)</td>
<td></td>
</tr>
<tr>
<td>Ld</td>
<td>-1.975** (0.0324)</td>
<td></td>
</tr>
<tr>
<td>Pg</td>
<td>-2.620*** (0.0087)</td>
<td></td>
</tr>
<tr>
<td>Lgcf</td>
<td>-1.746** (0.0489)</td>
<td></td>
</tr>
<tr>
<td>Lgai</td>
<td>-1.969** (0.0323)</td>
<td></td>
</tr>
<tr>
<td>Tgs</td>
<td>-2.796*** (0.0060)</td>
<td></td>
</tr>
<tr>
<td>Bmg</td>
<td>-2.666*** (0.0081)</td>
<td></td>
</tr>
<tr>
<td>repo</td>
<td>-1.959** (0.0333)</td>
<td></td>
</tr>
<tr>
<td>Gne</td>
<td>-2.239*** (0.0190)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ computation
Table 3 displays the matrix of correlations as this becomes crucial in order to evaluate the level of associations among the variables. The metric of poverty, lhfc has a direct association with government expenditure on education, investments in artificial intelligence, taxes on goods and services, gross capital formation, and the interacted term, aie. On the other hand, lhfc negatively correlates with gne, bmg, and the repo rates. The level of correlations of lhfc and the foregoing variables are relatively minimal. Other variables also show various combinations of associations. For instance, pge directly relates with lgai,tgs, bmg and aie but negatively relates with gne, repo rates, and lgcf. A direct association is the field day between investments in artificial intelligence and tgs, bmg, and aie while inversely relates with gne, repo rates, and lgcf. While Taxes on goods and services negatively correlate with gne and repo rates, it however positively relates with bmg, lgcf, and aie. The association between gne, bmg, and aie is also negative but gne has a positive association with repo rates and gross capital formation. Broad money growth directly relates with aie but inversely relates with repo rates and gross capital formation. Moreover, repo rates directly relate with gross capital formation but inversely relate with aie, while gross capital formation negatively correlates with the interaction term aie. The lag length of the respective variables occupied Table 4 which shows all the variables exhibited a lag length of 2 each. The unit root was consequently evaluated on the basis of the lags.

Table 3. Matrix of correlations

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) lhfc</th>
<th>(2) pge</th>
<th>(3) lgai</th>
<th>(4) tgs</th>
<th>(5) gne</th>
<th>(6) bmg</th>
<th>(7) repo</th>
<th>(8) gne</th>
<th>(9) bmg</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) lhfc</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) pge</td>
<td>0.351</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) lgai</td>
<td>0.611</td>
<td>0.722</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) tgs</td>
<td>0.706</td>
<td>0.447</td>
<td>0.488</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) gne</td>
<td>-0.029</td>
<td>-0.857</td>
<td>-0.681</td>
<td>-0.083</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) bmg</td>
<td>-0.124</td>
<td>0.841</td>
<td>0.558</td>
<td>0.181</td>
<td>-0.862</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) repo</td>
<td>-0.337</td>
<td>-0.916</td>
<td>-0.705</td>
<td>-0.335</td>
<td>0.865</td>
<td>-0.724</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8) lgcf</td>
<td>0.436</td>
<td>-0.670</td>
<td>-0.283</td>
<td>0.075</td>
<td>0.787</td>
<td>-0.939</td>
<td>0.593</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>(9) aie</td>
<td>0.502</td>
<td>0.941</td>
<td>0.913</td>
<td>0.492</td>
<td>-0.844</td>
<td>0.763</td>
<td>-0.892</td>
<td>-0.532</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: Authors’ computation

Table 4. Lag length

<table>
<thead>
<tr>
<th>Variables</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pge</td>
<td>2</td>
</tr>
<tr>
<td>Lhfc</td>
<td>2</td>
</tr>
<tr>
<td>Lgcf</td>
<td>2</td>
</tr>
<tr>
<td>Lgai</td>
<td>2</td>
</tr>
<tr>
<td>Bmg</td>
<td>2</td>
</tr>
<tr>
<td>Tgs</td>
<td>2</td>
</tr>
<tr>
<td>Repo</td>
<td>2</td>
</tr>
<tr>
<td>Gne</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Authors’ computation

4.1 Prais Winsten AR (1) regression

Table 5 displays the empirical estimates of the effect of the respective variables on household consumption, a proxy for poverty. Our findings show that government expenditure on education, investment in artificial intelligence, gross national expenditure, broad money growth, gross capital formation, and the interacted term of aie significantly affect household consumption and, therefore, the poverty level in South Africa.
Specifically, a unit increase in government expenditure on education and investments in artificial intelligence decrease household consumption, which implies that the poverty level increases by 0.194 and 0.163, respectively. On the other hand, the poverty level respectively falls by 0.007 and 0.014 due to a point increase in gross national expenditure and broad money growth. Moreover, a one percent rise in gross capital formation was established to generate a 1.022 percent increase in household consumption, which invariably implies a decline in poverty. Finally, an effort was made to create a new variable by interacting investments in artificial intelligence and government expenditure on education with a view to assessing the probable impact of an educational system that is AI-fortified on the level of poverty in the country. Our observation on the interacted term shows that a unit increase in aie increases household consumption by 0.031 and, by implication, reduces poverty in South Africa. The overall model has an F-test of 883.666 at a p-value of 0.000 which is statistically significant.

Table 5. Prais-Winsten AR(1) regression

<table>
<thead>
<tr>
<th>lhfc</th>
<th>Coef.</th>
<th>St.Err.</th>
<th>t-value</th>
<th>p-value</th>
<th>[95% Conf Interval]</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>pge</td>
<td>-.194</td>
<td>.074</td>
<td>-2.62</td>
<td>.018</td>
<td>-.351</td>
<td>.037**</td>
</tr>
<tr>
<td>lgai</td>
<td>-.163</td>
<td>.053</td>
<td>-3.05</td>
<td>.008</td>
<td>-.276</td>
<td>-.05***</td>
</tr>
<tr>
<td>tgs</td>
<td>.001</td>
<td>.002</td>
<td>0.55</td>
<td>.589</td>
<td>-.003</td>
<td>.005</td>
</tr>
<tr>
<td>gne</td>
<td>.007</td>
<td>.001</td>
<td>6.03</td>
<td>0</td>
<td>.004</td>
<td>.009***</td>
</tr>
<tr>
<td>bmg</td>
<td>.014</td>
<td>.003</td>
<td>4.30</td>
<td>.001</td>
<td>.007</td>
<td>.021***</td>
</tr>
<tr>
<td>repo</td>
<td>-.002</td>
<td>.001</td>
<td>-1.20</td>
<td>.246</td>
<td>-.005</td>
<td>.001</td>
</tr>
<tr>
<td>lgcf</td>
<td>1.022</td>
<td>.122</td>
<td>8.37</td>
<td>0</td>
<td>.763</td>
<td>1.281***</td>
</tr>
<tr>
<td>aie</td>
<td>.031</td>
<td>.009</td>
<td>3.36</td>
<td>.004</td>
<td>.011</td>
<td>.051***</td>
</tr>
<tr>
<td>Constant</td>
<td>-.25</td>
<td>1.229</td>
<td>-0.20</td>
<td>.841</td>
<td>-2.854</td>
<td>2.354</td>
</tr>
</tbody>
</table>

Mean dependent var = 11.381
SD dependent var = 0.032
R-squared = 0.998
Number of obs = 25
F-test = 883.666
Prob > F = 0.000
Akaike crit. (AIC) = -227.687
Bayesian crit. (BIC) = -216.717

*** p<.01, ** p<.05, * p<.1
Rho = -.005
Durbin–Watson statistic (original) = 1.957405
Durbin–Watson statistic (transformed) = 1.956524

Source: Authors’ computation

5.0. Discussion of the empirical results

This section situates the empirical findings within the ambit of the previous studies. Our findings show that increasing investments in artificial intelligence reduces household consumption. The implication of the foregoing is an increase in the level of poverty.

The effect of investment in artificial intelligence in reducing household consumption and by implication, increasing poverty may be attributed to the displacement of workers by advanced technology. Additionally, the relatively low skill levels of the population compared to advancements in artificial intelligence could hinder labor employment, resulting in reduced income and constrained household consumption, thereby exacerbating poverty levels. The negative influence of artificial intelligence on household consumption in South Africa contradicts the findings of Mhlanga (2021), who examined the impact of artificial intelligence on achieving poverty levels.
sustainable development goals, with a focus on poverty reduction, industry, innovation, and infrastructure development in emerging economies. Using content analysis, the author observed that artificial intelligence has a substantial impact on SDGs, particularly in reducing poverty and improving the reliability of infrastructure, such as transportation, leading to potential economic growth and development in emerging countries. The author noted that artificial intelligence contributes to poverty reduction by enhancing data collection for poverty-related assessments and promoting agricultural and financial sector development through financial inclusion. Furthermore, the empirical findings show that government expenditure on education reduces household consumption and thus increases poverty. This contradicts the expectation of a higher income-generating capacity arising from the acquisition of human capital through government expenditure on education. This could possibly be a result of the challenges in efficiently channeling public funds to intended projects. A comparable study is that of Sayyidina et al. (2023), which evaluated, with respect to Eastern Indonesia, the impact of government expenditure in the education sector, human development index, and economic growth on poverty rates. By utilizing multiple linear regression techniques in a panel comprising 13 provinces, the author found, among others, a negative, non-significant effect on poverty of government spending in the education sector. Furthermore, the empirical findings provide evidence that gross national expenditure and broad money growth result in an increase in household consumption and, invariably, a decline in poverty. The desirable effect of government spending could be as a result of well-organized and efficiently channelled government resources to intended projects, which boosts productivity, enhances the income of households and consumption, and consequently reduces poverty in the country. Also, the desirable effect of money supply could be a result of a well-administered money supply by the SARB, which are effectively channelled to productive uses via the commercial banks.

The result corroborates the findings of Anjande et al. (2022) in terms of government expenditure but contradicts in terms of money supply. The authors analyzed the effect of government spending and money supply in the alleviation of poverty in Africa by using 48 Sub-Saharan African countries over the span of 2001 to 2017. By utilizing the techniques of one-step and two-step system GMM, it was observed that government spending and foreign direct investment exert a significant negative impact on generating a decline in poverty while money supply exerts a direct effect on poverty.

The empirical findings also reveal that gross capital formation significantly increases household consumption and, therefore, reduces the level of poverty in South Africa. This scenario could be due to the development of capital formation in the country that is effectively utilized to boost productivity and employment and consequently decrease the level of poverty. A comparable result is the study of Akobeng, E. (2017) that analyzed the impact of gross fixed capital formation on poverty as well as investigated if the relationship between gross fixed capital formation and poverty can be enhanced by institutions. The study covered a panel of 41 Sub-Saharan African economies over the span of 1981-2010 as well as employed the dynamic two-step system generalized technique of moment estimator. The author established that gross fixed
capital formation causes a decline in poverty, while institutions stimulate the link between gross fixed capital formation and poverty.

Furthermore, an empirical outcome of our finding also shows that interacting investments in artificial intelligence and government expenditure on education (a proxy for education) increase household consumption and, by implication, decrease poverty in South Africa. This is an indication that educational investments in the country that incorporate the technological revolutions of investments in artificial intelligence, which better equip the populace, will enhance their prospects for employment and income generation and consequently cause a decline in the poverty level.

The Prais-Winsten regression produced a Durbin-Watson statistic of 1.957, which implies that the null hypothesis of no serial auto-correlation cannot be rejected. Therefore, no correlation among the residuals enhances the reliability of the estimates. Subsequently, the skewness and Kurtosis tests for normality were examined as contained in Table 6. The test resulted in a probability of 0.175, which is not statistically significant. It implies that the null hypothesis that the model is normally distributed cannot be rejected, which is also supported by the Shapiro-Wilk test in Table 7, having a p-value of 0.427 which is not statistically significant. Furthermore, the normality test was also supported by the Jarque-Bera statistic of 1.567 with a p-value of 0.457.

Also, effort was made to run the usual ordinary least squares regression in order to assess the state of heteroscedasticity. The outcome is presented in 9. The p-value of 0.406, which exceeds the critical value of 0.05, shows that the null hypothesis that the model is homoscedastic cannot be rejected, which is also corroborated by the Breusch-Pagan/Cook-Weisberg test having a chi-square of 2.24 at a p-value of 0.134.

### Table 6. Skewness and kurtosis tests for normality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Pr(skewness)</th>
<th>Pr(kurtosis)</th>
<th>Adj chi2(2)</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>25</td>
<td>0.2435</td>
<td>0.1843</td>
<td>3.48</td>
<td>0.1753</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation*

### Table 7. Shapiro–Wilk W test for normal data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>W</th>
<th>V</th>
<th>Z</th>
<th>Prob&gt;z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>25</td>
<td>0.96061</td>
<td>1.095</td>
<td>0.185</td>
<td>0.427</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation*

### Table 8. Jarque-Bera statistics

<table>
<thead>
<tr>
<th>Jarque-Bera normality test</th>
<th>1.567</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi(2)</td>
<td>.4568</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation*

### Table 9. Cameron & Trivedi’s decomposition of IM-test

<table>
<thead>
<tr>
<th>Source</th>
<th>chi2</th>
<th>DF</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteroskedasticity</td>
<td>25.00</td>
<td>24</td>
<td>0.4058</td>
</tr>
<tr>
<td>Skewness</td>
<td>9.89</td>
<td>8</td>
<td>0.2728</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.29</td>
<td>1</td>
<td>0.1299</td>
</tr>
<tr>
<td>Total</td>
<td>37.18</td>
<td>33</td>
<td>0.2823</td>
</tr>
</tbody>
</table>

*Source: Authors’ computation*
**CONCLUSION AND POLICY RECOMMENDATIONS**

The South African government is committed to achieving and sustaining Sustainable Development Goal (SDG) 1 of the United Nations, which focuses on eradicating poverty. However, the empirical research question on how to effectively harness the use of artificial intelligence (AI) and fiscal policy (especially the element of government expenditure) is yet to be addressed in the literature, particularly concerning the South African economy. Hence, this study examines the artificial intelligence investment-poverty-fiscal policy nexus for South Africa spanning 2016q1 to 2022q1. We employed the Prais-Winsten AR (1) regression. Specifically, this study used investment in artificial intelligence as a measure of the fourth industrial revolution, while also incorporating other variables such as government national expenditure, government expenditure on education, taxes on goods and services, repo rates, gross capital formation, broad money growth, household final consumption expenditure (to measure poverty) as well as the interaction of government expenditure on education and investments in artificial intelligence. We observe that government expenditure on education alone, rather than decreasing the poverty level, however, increases it. However, when government expenditure
on education interacted with investments in artificial intelligence, it reduced poverty. This contributes to the literature by indicating that government expenditure on education that is AI-fortified will result in poverty reduction in the country. A similar conclusion also goes for investments in artificial intelligence, which increases the poverty level when not interacting with education in the country. We also conclude that the appropriate management of the major macroeconomic policy of fiscal and monetary policies is crucial for poverty reduction following the statistical significance of government expenditure on education, government national expenditure, and broad money growth. Moreover, we found gross capital formation to significantly increase household consumption and, therefore, reduce the poverty level in South Africa.

Based on the findings presented in this study, here are some policy recommendations within the context of South Africa: (i) address the issue of low skill levels among the population by investing in education and vocational training programs. This will help the workforce to adapt to technological advancements, including artificial intelligence, and reduce the risk of job displacement; (ii) the South African government should encourage the development and adoption of AI technologies in a way that prioritizes poverty reduction. This could involve supporting AI projects that focus on job creation and skill enhancement, particularly in sectors that are critical to South Africa's economy; (iii) sustaining the efficiency and transparency of government expenditure to ensure that public funds are channeled effectively into projects that benefit the population. This may involve enhancing governance, reducing corruption, and implementing better monitoring and evaluation mechanisms; (iv) the desirable impact of the money supply should be sustained through appropriate monetary policy by SARB that ensures commercial banks minimize to the barest minimum the incidence of asymmetric information in the management of fund supplied to the economy through the commercial banks; (v) the government should continuously monitor the impact of AI, government expenditure, and economic policies on household consumption and poverty levels. Be prepared to adapt policies as needed based on evolving circumstances and outcomes; (vi) the government should collaborate with international organizations and other countries to gain insights into effective strategies for addressing the challenges posed by AI and its impact on poverty; (vii) the government should invest in data collection and research to better understand the dynamics between AI, government expenditure, poverty, and household consumption. This is because informed policymaking relies on accurate and up-to-date information; (viii) the government should foster public awareness and participation in policy discussions and decisions related to AI and poverty alleviation. The government should engage with civil society organizations, experts, and the public to ensure that policies are well-informed and inclusive, and (ix) the government should reinforce the sustainability of capital formation that meets the productive needs of investors both in the private and public sectors.

The limitation of this study is that the availability of data on investments in artificial intelligence is of limited coverage, which was transformed to a quarterly frequency and, therefore, other variables. Therefore, with the availability of more data in years to come, future research should investigate whether the conclusions established in this study withstand empirical scrutiny within the availability of more streams of data to further
enhance our current understanding of the research topic. This will be especially relevant for deriving additional policy recommendations and implications.

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MANAGERIAL ACCOUNTING SYSTEM BETWEEN CORPORATE GOVERNANCE AND KNOWLEDGE MANAGEMENT

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ABSTRACT

Purposes: Managerial accounting systems affect the management of knowledge in business, but they are determined by corporate governance. Therefore, they likely mediate the link between corporate governance and knowledge management, which has been before ignored. The current work attempts to investigate the mediation of managerial accounting systems in transmitting the influence of corporate governance on management of knowledge in business.

Methods: The research data was collected from enterprises selected on Vietnam’s major stock exchanges. The collected data was checked for reliability with the techniques of reliability analysis and exploratory factor analysis. The linkages among managerial accounting systems, corporate governance and the management of knowledge in business were tested by linear regression analyses. Lastly, mediating analyses were applied to investigate the mediation of managerial accounting systems in transmitting the impact of corporate governance on the management of knowledge in business.

Results: The empirical findings reveal that, the adoption of managerial accounting systems in business is a predecessor of knowledge management in business, but it is in turn decided by corporate governance. The mediation of managerial accounting systems between the influence of corporate governance on the management of knowledge in business is also statistically supported.

Implications: The empirical findings suggest that executive directors would decide on suitable systems of managerial accounting in business and the appropriate adopting level of knowledge management in business in accordance with the existing corporate governance, which could result in the best organizational performance.

Keywords: corporate governance, knowledge management, managerial accounting

JEL classification: D83, G34, M41, O16

Paper type: Research article


INTRODUCTION

The core purpose of managerial accounting is to help executive directors in professionally undertaking their tasks: arrangement, establishing, guiding, and monitoring. Managerial accounting is an important part of the economic and financial managerial system; therefore, in order for accounting to fully promote their functions of informing and inspecting to serve managers, each firm need to build complete managerial accounting systems for itself (Chenhall & Langfield-Smith, 1998); where, managerial accounting systems specialize in processing and providing accounting information to serve the performance of managers’ functions such as planning, organization, checking and decision making. This contributes to overcoming shortcomings,
backlogs, and implementing innovations in production and business in order to control the market, which ultimately improves the efficiency of production and business activities. Managerial accounting systems adopt procedures related to managerial accounting and works across all of the units in business. With the important role and function of managerial accounting systems, it is necessary for the firms to have a full awareness of managerial accounting systems and have a plan to apply these tools in business management (Phung Le Thuy, 2013).

The application of managerial accounting systems in enterprises, however, depends on business conditions of enterprises; of which, the corporate governance structure is a very important factor affecting the level of managerial accounting system application in enterprises (Wang & Huynh, 2014). According to Nham Phong Tuan and Nguyen Anh Tuan (2013), corporate governance is becoming a hot topic in discussions among government agencies and departments, especially when the Government is committed to promoting the acquisition process. An important factor to enhance the competitiveness of enterprises is financial transparency and the accountability of effective management principles. Moreover, corporate governance is also considered as a long-term catalyst to change the business mindset of Vietnamese people, thereby better meeting the requirements of foreign investors and the global economy. In addition, a study by Huynh (2015) suggested and proved that, there is a very complex interrelationship between corporate governance and managerial accounting systems, in which corporate governance is the first factor determining the level of application of managerial accounting systems in enterprises. Furthermore, Sori (2009) analyzed the acceptance of managerial accounting systems and their contribution to the management of knowledge in business. The research result indicated the acceptance of managerial accounting systems could augment the role of accounting within an organization that so enlarges the value of information. This will make significant usage of implicit and clear knowledge to allow organizations to make operative business decisions. Overall, managerial accounting systems work as an intermediate factor in transmitting the effect of corporate governance on knowledge management via itself.

In Vietnam, managerial accounting is still quite new, specifically managerial accounting has just appeared in Vietnam, starting when the Law on Accounting introduced the concept of managerial accounting, although it has appeared long ago in developed countries (Doan et al. 2011). Through the actual research and survey of a number of enterprises in Vietnam today, managerial accounting has initially received the attention of business leaders, however, it can be seen that there are still specific shortcomings that hinder the firm from adopting managerial accounting systems in business (Phung Le Thuy, 2013). On the other hand, Sulaiman et al. (2004) emphasized that, there is still a lack of empirical research on managerial accounting systems in developing economies of Southeast Asia, including Vietnam, and that there is necessary to have more studies on the implementation of the above mentioned managerial accounting systems in business. Besides, Doan et al. (2011) said that the number of studies on managerial accounting systems in Vietnam is very modest, and suggested that scholars should conduct more research on managerial accounting systems in this country, especially studies on the relationship between corporate governance, managerial accounting systems and the
management of knowledge. Across various research of corporate governance, Carpenter et al. (2010) emphasized that there is little theoretical or empirical investigation which has been offered. From a viewpoint of knowledge management, Carpenter et al. (2010) indicated that this omission is very significant.

In addition, previous studies asserted that there is no sole and general managerial accounting system for all firms, because this is dependent on factors of business environment. However, there has been a lack of empirical evidence research on managerial accounting systems in developing nations (Ghasemi et al., 2016). In Vietnam so far, however, there seems to be no research on the role of corporate governance in the level of managerial accounting system application and the management of knowledge in business. More importantly, no research on the mediation of managerial accounting systems in the research model has been undertaken. Consequently, studying the role of managerial accounting systems between corporate governance and the management of knowledge in business is very meaningful for enterprises in Vietnam.

**CORPORATE GOVERNANCE ON KNOWLEDGE MANAGEMENT VIA MANAGERIAL ACCOUNTING SYSTEM**

Mayer (1997) referred to corporate governance as methods of taking the benefits of stakeholders and executives into line as well as confirming, corporations are operated for the interests of shareholders. Corporate governance is regularly focused on the configuration and purpose of administrative boards. According to Cadbury (1992), corporate governance is viewed as an observing instrument to diminish the agency costs as a result of the difference in ownership with management, and thus increase corporate effectiveness. Cassell (2012) assessed the corporate governance structure on the composition of administrative boards, and on the role of the chairperson of administrative boards.

Salvato and Melin (2008) confirmed decentralization of administration to independent executives who had excellent professional qualifications and good work experience will increase the level of formality of documents used in the enterprise. Independent directors are often required to report periodically and extraordinarily to the Board of Directors and major Shareholders. Therefore, they must apply standard management tools to effectively control business activities of enterprises (Cromie et al. 1995). On the other hand, Christine et al. (2011) conducted a research on corporate governance and managerial accounting systems and suggested that it is necessary to set up a single division to be responsible for managerial accounting systems in enterprises in which formal managerial accounting systems are applied. Their research results also showed that the professional level of independent directors has a relation with the level of application of complex managerial accounting systems. In addition, Agrawal and Chadha (2005) found evidence of the ability to edit financial accounting statements in enterprises where the members of the board of directors and the supervisory board as the majority of independent experts was lower than that of other enterprises. This evidence is consistent with the argument that independent directors tend to use formal managerial accounting systems which produce more truthful financial statements. Moreover, the fact that the chairperson of the managerial board concurrently holds the position of the general director has a vital role in influencing the acceptance of
managerial accounting systems. The abovementioned arguments lead to the proposition that corporate governance likely controls the adoption of managerial accounting systems in business. Moreover, Sam et al. (2012) elicited the separation of chairmen plays a vital role in making business decisions on the acceptance of managerial accounting systems and recommended a tie between the implementation of managerial accounting systems and the role of chairmen.

Managerial accounting systems are instruments designed to deliver both financial and non-financial information to enterprises (Ajibolade et al. 2010). This information will help managers make more accurate business decisions. According to Kaplan (1983), managerial accounting systems are considered as part of the corporate management system. Their role is to provide suitable information for managerial planning and control to augment organizational performance. A study by Lucas (1997) suggested that managerial accounting systems are very useful tools to provide accurate and complete information for business planning and management in the highly dynamic environment today. Based on the above authors’ point of view, this research determines the level of application of managerial accounting systems in enterprises, the extent to which enterprises choose and implement managerial accounting systems in their businesses. On the other hand, Mayer (1997) defined corporate governance as the mechanisms and regulations through which enterprises are operated and controlled. According to Cadbury (1992), corporate governance indicates the rights and responsibilities among various members of the enterprise, including shareholders, boards of directors and other stakeholders.

In addition, the characteristics of corporate governance are found to have effects on strategic management accounting in two aspects, which are participation and use (Arunruangsirilert & Chonglertham, 2017). Following this viewpoint, Honggowati et al. (2017) studied the impact of corporate governance on strategic management accounting, indicating that board size and managerial ownership impose effects on the disclosure of strategic management accounting; whereas the percentage of independent board does not affect. Likewise, Honggowati et al. (2020) analyzed the importance of the boards to the extent of strategic management accounting. The findings indicated that the characteristics of boards impose an influence on the extent of strategic management accounting. In regard to the linkage corporate governance, and management accounting, van der Poll and Mtihiane (2018) investigated the interrelationship between corporate governance and management accounting in business, indicating a significant positive mutuality between corporate governance and management accounting.

Chaudhary (2021) found out the association between knowledge management and human resource; whereas, Zhernov and Strelnikov (2021) tried to determine the likelihood and extents of adoption of the perception of performativity and speech act theory in the management of knowledge for its humanization and socialization. Furthermore, Dodla and Jones (2023) asserted that, the adoption of knowledge management in business can help determine how a firm manages knowledge, and recommended that, knowledge management practices are important for safeguarding and continuing firm performance.

In addition, Klein and Prusak (1994) referred to the intellectual capital as valuable knowledge; whereas,
other scholars (Sullivan, 2000; Kok, 2007) indicated intellectual capital creates knowledge. Henceforward, the bond between managerial accounting systems and management of knowledge may be considered correspondingly to the tie between managerial accounting systems and the intellectual capital (Reinhardt et al., 2001; Serenko & Bontis, 2022). Likewise, Tayles et al. (2002) examined the bond between the management of intellectual capital and the adoption of managerial accounting systems in business, suggesting the acceptance of managerial accounting systems in business will support management of intellectual capital. In addition, Cleary (2009) investigated the association between management accounting and structural capital, revealing that organizations accept management accounting practices in business to equip themselves with the suitable information vital for the management of intellectual capital in business; whereas, Novas et al. (2017) stressed the importance of management accounting practices in creating and developing intellectual capital in business. Furthermore, Zandi et al. (2019) analyzed the effect of knowledge transfer as a component of knowledge management and environmental performance, highlighting the influence of environmental management accounting in the research model, and confirming that knowledge transfer is positively affected by environmental management accounting practices in business.

Concerning the bond between accounting information and management of knowledge, Sori (2009) attempted to analyze the adoption of accounting information systems and their contribution to the management of knowledge in business, unveiling that the adoption of accounting information systems could enhance the roles of accounting in running organizations and boost the value of information. Automatic accounting information systems could improve the making procedure of financial statements and handle human weaknesses in processing data. Accounting information systems make substantial usage of implicit and clear knowledge to allow organizations to deliver operative business decisions. Similarly, Ahmad and Al-Shbiel (2019) emphasized the importance of knowledge management in increasing organizational efficiency, but knowledge management is driven by adoption of accounting information practices in business. Furthermore, Novas et al. (2012) studied the influence of managerial accounting systems on the implementation of intellectual capital, concentrating on the vital role of managerial accounting systems in growing intellectual capital. The research results indicate managerial accounting systems positively affect the application of intellectual capital or the management of knowledge in business.

Back to 1995, Birkett underlined a change in systems of managerial accounting during the last few years. Conventionally, stress on managerial accounting has been on the information of accounting. Accounting data which managerial accountants used is to assist in planning and management. Conventional systems of managerial accounting have been called into question. Businesses have started to incorporate providers as well as clienteles into the organization’s business decisions. Consequently, the connection of managerial accounting systems with the management of knowledge in business ought to be developed. It can then recommend that the acceptance of managerial accounting systems could affect the implementation of knowledge management.

In addition, a study by Foss (2007) offers us the opportunity to investigate a likely set of procedures linking corporate governance with the management of knowledge in business. Based on Carpenter et al. (2010), a few
studies have connected corporate governance with promising results, but the overall findings are mixed. One possible explanation for these ambiguous results is that there have been few previous studies of corporate governance on the linkage between governance practices and an organization’s capability to manage the creation and transfer of knowledge. If the ability to efficiently manage knowledge is deemed as an important cause of organizational performance and adaptability, then it is similarly vital to offer attention to the behavioural reinforcements of operative management of knowledge found in governance mechanisms (Eisenhardt and Martin, 2000; Grant, 1996). Following Foss (2007), Carpenter et al. (2010) classified few mechanisms which connect governance practices and the management of knowledge in business.

Likewise, Jen et al. (2020) disclosed that knowledge sharing as an element of knowledge management works as a mediator between corporate governance practices and supply chain performance. The findings clarified the importance of corporate governance mechanisms in the research model. Karyatun et al. (2023) evaluated the best model for corporate governance and knowledge management in augmenting effectiveness; while, Alabdullah and Mohamed (2023) examined the effect of corporate governance practices on capital structure with a concentration on knowledge management. For the linkage between corporate governance and intellectual capital, Achim et al. (2023) studied the impact of corporate governance on intellectual capital as a component of knowledge management, demonstrating that there is a positive linkage between corporate governance and intellectual capital. The results suggest that good corporate governance mechanisms and intellectual capital could improve organizational performance.

Overall, the adoption of managerial accounting systems in business is a driving force of adopting knowledge management in business, but it is a consequence of corporate governance; whereas corporate governance mechanisms also augment the adoption of knowledge management in business. Therefore, it can suggest the linkage between corporate governance and the application of knowledge management in business can be mediated by the implementation of managerial accounting systems in business.

**METHODOLOGY**

**Data Collection**

The data used in the current research were primary data collected from a questionnaire survey. From Hoang Trong and Chu Nguyen Mong Ngoc (2008), with a reliability of 95% and a statistical error of 5%, the sample size is supposed to be 385. From the above results, the sample size was 385 observations. In order to ensure that the number of survey sheets collected is fully met with the necessary information for the research and has a sufficient sample size, however, this research conducted a survey of 500 enterprises. Enterprises were selected by random sampling method among companies listed on 3 major stock exchanges of Vietnam. Finally, only 423 collected survey sheets met the information requirements for analyses in this research.

**Measurements**

Corporate Governance (CGO) is computed on the proportion of independent directors (CGO1) and the
The separation of chairman positions (CGO2). That are adapted from (Cassell 2012). The majority of independent directors takes 1 if the percentage of independent executives is more than 50%, otherwise as 0. The separation of chairman positions takes 1 if the positions of chairman and chief executive officer are separate, otherwise as 0. Managerial accounting system (MAA) is estimated with a five-point scale. This is modified from Cinquini et al. (2008). MAA is composed of six items. MAA1 is traditional budgeting, MAA2 is cost volume profit analysis, MAA3 is activity based costing, MAA4 is total quality management, MAA5 is variance analysis, and MAA6 is balanced scorecard. That is adapted from the prior research (Lucas 1997; Al-Omiri & Drury 2007). Knowledge management (KNM) is calculated with a five-point scale on five items, which is adapted from Lin and Lee (2005). KNM1 is the distribution of knowledge among managers and juniors. KNM2 is the distribution of knowledge among coworkers. KNM3 is the distribution of knowledge across the divisions. KNM4 is the successful monitoring of various sources and forms of knowledge. KNM5 is applying knowledge in everyday task.

**Analytic techniques**

The research model analyzed the associations among corporate governance, management accounting, and management of knowledge. In which, the factor of corporate governance structure includes two observed items, the factor of managerial accounting application is composed of six observed items, and the factor of knowledge management consists of five observed items. The information for these observed items was collected from enterprises selected on three major stock exchanges of Vietnam. After that, the collected data was analyzed using SPSS 18 software. First, the data was checked for reliability with the techniques of reliability analysis and exploratory factor analysis. Reliability analysis is a statistical technique used to statistically analyze the appropriateness of observed items representing the key variables they constitute. Meanwhile, exploratory factor analysis is performed to check the suitability between the key factors/variables. Then, the hypotheses in the research model were tested by linear regression analysis techniques. These analyses are used to check the suitability of regression model and statistical hypotheses that are supported or rejected by the collected data set. Finally, mediating analyses were applied to scrutinize the transmitting role of managerial accounting systems in the effect of corporate governance on knowledge management.

**RESEARCH RESULTS**

Reliability analysis technique is used to statistically analyze the suitability of observed items that represent the main variable they constitute. The outcomes of the reliability analysis are exhibited in Table 1. The figures from Table 1 show that the correlation coefficients of the observed items in the scale are all greater than the 0.5 value. This proves that observed items of a scale are similar (Hair, 2011). In addition, the Cronbach's alpha results show that the components of the scale have high and good reliability coefficient which is greater than 0.7 (Hair, 2011). All 9 observed items meet the reliability requirements, so all of them are included in exploratory factor analysis to check the suitability among the main factors/variables. The results of the
exploratory factor analysis technique are revealed in Table 2, with factor coefficients less than 0.3 that are not shown.

Table 1. Reliability analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Observed item</th>
<th>Correlation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAA</td>
<td>MAA1</td>
<td>.754</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAA2</td>
<td>.652</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAA3</td>
<td>.637</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAA4</td>
<td>.628</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAA5</td>
<td>.627</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MAA6</td>
<td>.645</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KNM1</td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KNM2</td>
<td>.738</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KNM3</td>
<td>.707</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KNM4</td>
<td>.722</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KNM5</td>
<td>.736</td>
<td>.886</td>
</tr>
</tbody>
</table>

The results from Table 2 show that the exploratory factor analyses have grouped the observed items into two main factors, consistent with the original theoretical framework. Specifically, the managerial accounting factor is formed from six eleven observed items have factor coefficients greater than 0.5, which satisfies the convergence of each factor (Hair, 2011).

Table 2. Exploratory factor analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Observed item</th>
<th>Factor coefficient</th>
<th>Common coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAA</td>
<td>MAA1</td>
<td>.828</td>
<td>.708</td>
</tr>
<tr>
<td></td>
<td>MAA2</td>
<td>.750</td>
<td>.592</td>
</tr>
<tr>
<td></td>
<td>MAA3</td>
<td>.761</td>
<td>.582</td>
</tr>
<tr>
<td></td>
<td>MAA4</td>
<td>.762</td>
<td>.581</td>
</tr>
<tr>
<td></td>
<td>MAA5</td>
<td>.746</td>
<td>.565</td>
</tr>
<tr>
<td></td>
<td>MAA6</td>
<td>.726</td>
<td>.588</td>
</tr>
<tr>
<td></td>
<td>KNM1</td>
<td>.820</td>
<td>.686</td>
</tr>
<tr>
<td></td>
<td>KNM2</td>
<td>.826</td>
<td>.704</td>
</tr>
<tr>
<td></td>
<td>KNM3</td>
<td>.812</td>
<td>.667</td>
</tr>
<tr>
<td></td>
<td>KNM4</td>
<td>.826</td>
<td>.690</td>
</tr>
<tr>
<td></td>
<td>KNM5</td>
<td>.822</td>
<td>.695</td>
</tr>
</tbody>
</table>

KMO .868
Pvalue .000

Besides, the difference between the factor coefficient of an observed item with the main factor and the remaining factors is greater than 0.3, which satisfies the divergence among factors (Hair, 2011). The common coefficients of all observed items are all greater than 0.5; so, they all satisfy the conditions of exploratory factor analysis (Hair, 2011). The Pvalue is 0.000, less than 1% and the KMO coefficient is 0.829, greater than 0.7, proving that the exploratory factor analysis for the research data set is suitable and reaches the statistically significant level of 1%.
All of the abovementioned criteria show that the data set used for this research satisfies the required level of reliability. After the data set used for this research satisfied the level of reliability according to statistical requirements, they continued to be analyzed by linear regression analyses to test the hypotheses in the research model. The linear regression analyses produced the results as described in Tables 3 & 4.

Table 3. Regression analysis

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>S.E.</th>
<th>t</th>
<th>Pt</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.842</td>
<td>.059</td>
<td>47.970</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>GCO1</td>
<td>.473</td>
<td>.087</td>
<td>5.459</td>
<td>.000</td>
<td>1.480</td>
</tr>
<tr>
<td>GCO2</td>
<td>.179</td>
<td>.087</td>
<td>2.047</td>
<td>.041</td>
<td>1.480</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td></td>
<td></td>
<td>1.888</td>
<td></td>
<td></td>
</tr>
<tr>
<td>χ²/ Pχ²</td>
<td>.631</td>
<td>.374</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.174</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F/ PF</td>
<td>34.561/ 0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Dependent Variable: MAA*

The linear regression results presented in Tables 3 & 4 showed that the determination coefficients of $R^2$ are equal to 0.174 and 0.081, which means that the corporate governance elements of CGO1 and CGO2 explain 17.4% of the variation in managerial accounting variable that in turn explain 8.1% of the variation in the knowledge management variable.

Table 4. Regression analysis

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>S.E.</th>
<th>t</th>
<th>Pt</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.493</td>
<td>.173</td>
<td>20.162</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td>MAA</td>
<td>.281</td>
<td>.052</td>
<td>5.360</td>
<td>.000</td>
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<tr>
<td>Durbin-Watson</td>
<td></td>
<td></td>
<td>1.891</td>
<td></td>
<td></td>
</tr>
<tr>
<td>χ²/ Pχ²</td>
<td>.422</td>
<td>.547</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.081</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F/ PF</td>
<td>28.734/ 0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Dependent Variable: KNM*

The Fisher coefficients are 34.561 and 28.734 at the 1% significance level, implying that the research models are suitable at the 1% significant level. Moreover, the Durbin-Watson coefficients attain the values of 1.888 and 1.891 falling in the interval from du to (4 – du); indicating no autocorrelation. The coefficients of $χ^2$ from the Breusch–Pagan test attain the values of 0.631 and 0.422 at the 0.374 and 0.547 significance levels that surpass the 10% level, demonstrating no heteroscedasticity. In addition, the values of VIF are all less than 2, showing no multicollinearity.

Table 3 also proves that the influences of the corporate governance variables of CGO1 and CGO2 on the managerial accounting variable are at the statistically significant levels of 1% and 5%, with influential coefficients of 0.473 and 0.179 respectively.
Table 5. Regression analysis

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>S.E.</th>
<th>t</th>
<th>Pt</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.963</td>
<td>.057</td>
<td>69.123</td>
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<tr>
<td>CGO1</td>
<td>.392</td>
<td>.084</td>
<td>4.666</td>
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<td>1.480</td>
</tr>
<tr>
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<td>.349</td>
<td>.084</td>
<td>4.136</td>
<td>.000</td>
<td>1.480</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.901</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>χ²/ Pχ²</td>
<td>.745/291</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>R²</td>
<td>215</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>F/PF</td>
<td>45.009/0.000</td>
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</table>

*aDependent Variable: KNM*

Table 6. Regression analysis

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>S.E.</th>
<th>t</th>
<th>Pt</th>
<th>VIF</th>
</tr>
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<tbody>
<tr>
<td>Constant</td>
<td>3.643</td>
<td>.161</td>
<td>22.561</td>
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<tr>
<td>CGO1</td>
<td>.338</td>
<td>.087</td>
<td>3.879</td>
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<td>CGO2</td>
<td>.329</td>
<td>.084</td>
<td>3.893</td>
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<td>1.900</td>
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<tr>
<td>χ²/ Pχ²</td>
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<td>R²</td>
<td>31.825</td>
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<td>F/PF</td>
<td>31.825/0.000</td>
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</tr>
</tbody>
</table>

*aDependent Variable: KNM*

Table 4 indicates that the impact of the managerial accounting variable on the management of knowledge is at the statistically significant level of 1%, with an influential coefficient of 0.281. Thus, the linear regression analyses offer statistical supports for the hypotheses. The adoption of managerial accounting systems in enterprises is partly determined by the corporate governance structure; but it is an antecedent of knowledge management.

To analyze the mediating role of managerial accounting systems on the linkage between corporate governance and knowledge management, first regression analyses were employed. The results are shown in Tables 5 & 6. Based on the determination coefficients of R², the Fisher coefficients, the Durbin-Watson coefficients, the coefficients of χ², the values of VIF, and P values, it can suggest the research models in Tables 5 & 6 gain goodness of fit to the data. It can be seen when included into the research model in Table 6, MAA decreases the influences of the corporate governance variables of CGO1 and CGO2 on the managerial accounting variable from 0.392 and 0.349 down to 0.338 and 0.329 respectively. In concurrence with Baron and Kenny (1986), it could suggest the acceptance of managerial accounting systems likely mediates the linkage between corporate governance and the management of knowledge. The mediating procedures stipulated by Goodman (1960) were applied to examine the statistical significance for the interceding impacts. The outcomes are displayed in Table 7. The empirical figures point out, the implementation of managerial accounting systems statistically mediates the effects of the corporate governance items of CGO1 and CGO2 on the management of knowledge at the 1% & 10% levels with the coefficients of 0.160 and 0.058 respectively.
It can then suggest that, managerial accounting systems transmit a partial influence of corporate governance on knowledge management in business via itself.

**CONCLUSION**

Corporate governance is a vital factor in the acceptance of managerial accounting systems and the management of knowledge. In Vietnam, however, there are almost no studies analyzing the relationship between corporate governance structure, the approval of managerial accounting systems and the management of knowledge. Consequently, the current research focuses on studying the causal relationship among corporate governance structure, the application of managerial accounting systems and the management of knowledge in business; in which the corporate governance structure is the factor that affects the acceptance of managerial accounting systems, which in turn stimulate the acceptance of knowledge management.

The current project applied statistical techniques such as reliability, exploratory factor, linear regression and mediating analyses to analyze and evaluate the influence of the corporate governance structure on the acceptance of managerial accounting systems and management of knowledge in business. The empirical results of this research are consistent with the results of previous studies on the causal relationship among the corporate governance and the application of managerial accounting systems and knowledge management.

The findings indicate that, enterprises, where the board comprises the higher proportion of independent directors and the separation of chairperson and chief executive officer can augment the adopting level of management accounting practices in business, and the accepting level of knowledge management in business. Enterprises, management accounting systems are paid attention by managers, and then they likely adopt more knowledge management in business. Furthermore, the current article also offers evidence on the mediating role of accepting management accounting practices in business between corporate governance and knowledge management in business. When management accounting practices are adopted in business, along with knowledge management, they can transmit a part of corporate governance influence on the implementation of knowledge management in business via them.

To the literature, the current research is the first to offer evidence on the mediation of approving management accounting systems in the influence of corporate governance mechanisms on the implementation of knowledge management in business. To the practical aspects, the research results of this work will help scholars study management and accounting as well as help leaders of Vietnamese enterprises have a deeper and more general understanding of the relationship among the corporate governance, the application of managerial accounting systems and management of knowledge in business. It will help to give some useful management implications for business managers in applying managerial accounting systems and knowledge.

### Table 7. Mediating analyses

<table>
<thead>
<tr>
<th>Mediating variable</th>
<th>Linkage</th>
<th>Coefficient</th>
<th>S.E.</th>
<th>t</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>MAA</td>
<td>CGO1→KNM</td>
<td>.160</td>
<td>.050</td>
<td>3.197</td>
<td>.0014</td>
</tr>
<tr>
<td>MAA</td>
<td>CGO2→KNM</td>
<td>.058</td>
<td>.031</td>
<td>1.869</td>
<td>.0615</td>
</tr>
</tbody>
</table>


management in business. This research also implies that business managers should choose suitable managerial accounting systems and the appropriate acceptance of knowledge management in business in accordance with the current corporate governance structure of their enterprises. This can help enterprises gain reasonable advantages over their competitors. As a result, enterprises will increasingly improve their organizational efficiency.

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Conceptualization, Q.L.H. and V.K.N.; methodology, Q.L.H. and V.K.N.; data collection, V.K.N.; formal analysis, Q.L.H.; writing—original draft preparation, Q.L.H. and V.K.N.; writing—review and editing, Q.L.H.; visualization, Q.L.H.; supervision, Q.L.H.; project administration, Q.L.H.
All authors have read and agreed to the published version of the manuscript.

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THE REGULATION OF FUNDING TROUBLED PROJECTS

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ABSTRACT

Objectives: A project may suffer a financial crisis; the project management shall seek to provide the necessary financial liquidity to overcome the state of default that has affected this project. Therefore, companies resort to seeking financing sources. However, the search for financing sources under the description of the project as Troubled is a very difficult task. How can a financier be convinced to finance a Troubled project?

Methods/Approach: the study followed the descriptive analytical comparative approach. The descriptive approach will be used to address the means of recovering the projects from the difficulties, and to analyze the legal articles governing this financing, and thus to address its controls, the comparative approach will be relied upon, where the financing of Troubled projects in the American Bankruptcy Law will be addressed, and thus the comparative approach will be used.

Results: the study addressed the concept of a Troubled project, the regulations for granting guaranteed financing, in addition to cross-collateralization. Considering that guarantees are the basis of financing, a lender will not finance without guarantees, especially if the project to which the loan is being provided is a Troubled project.

Conclusions: The study reached several recommendations, including the establishment of a Troubled projects support fund, which would be funded by contributions from the companies themselves and would be under the authority of the government. In addition, establishing a government fund to support Troubled projects, with financing priorities divided according to the importance of the project to the economy. These loans would be interest-free.

Keywords: Troubled projects, Stalled Project, Funding Project, Cross-Collateralization, Funding Guaranteed

JEL classification: K2; K4; O57; P5

Paper type: Research article


INTRODUCTION

There is no doubt that business transactions are based on forward transactions, meaning that the seller gives the buyer a grace period to pay for the goods, as the buyer rarely pay the full price for the goods in cash immediately. Forward transactions rely on trust between traders regardless of the guarantees that will be provided to accept these forward transactions. Accepting forward transactions is credit, and the credit is the trust that the creditor gives to the debtor. The laws governing business transactions in all countries seek to protect this trust and prevent anything that disturbs it. Efforts to preserve that trust come as a result not of protecting trust itself, but because the debtor's creditor is a debtor to another creditor and so on. This is the pattern of business life. Business transactions between traders are compared to rings, each relationship between a creditor and a debtor forms a ring, and each ring is intertwined with the other because every creditor is a debtor and every debtor is a creditor. Therefore, the default of any debtor from fulfilling his obligations will
inevitably lead to the default of his creditor in fulfilling his obligations because his creditor is a debtor to another creditor and so on, the business life will be completely paralyzed. Therefore, bankruptcy was found as a means to remove the debtor from the circle of business transactions with the least losses by liquidating all of his assets and distributing the proceeds of the sale among the creditors. Certainly, the creditors will not get their full debts, but a part of them, because if the creditors get their rights in full, why did the debtor stop fulfilling his debts and his debts exceeded his assets.

Therefore, one of the most dangerous situations that a company can go through is a financial crisis. It raises the interest of the owners, creditors, and all stakeholders associated with the company. The financial difficulties will not be overcome except by the combined efforts of all stakeholders who are keen on the company continues. Undoubtedly, a troubled company faces many challenges, the most important of which is providing the necessary financial liquidity to overcome the state of irregularity in paying off its debts in order to get out of its crises and rebalances its books. To manage the necessary liquidity in the face of this crisis that may lead to the bankruptcy of the company if it is not dealt with competently, companies resort to looking for financing sources. Definitely, it is difficult to obtain financing for economically strong projects due to the multiplicity of financing requirements. Therefore, it becomes more difficult to the point of impossibility if the applicant for financing is a Troubled project. It is difficult to convince a lender to finance a Troubled project and the difficulty of obtaining his money that he will provide as a debt for this project. Studies that have addressed the financing of Troubled projects, including the study of (Carapeto, 1999), indicate that new financing for borrowers from troubled companies undergoing restructuring provides greater opportunities for successful restructuring.

Elayan and Thomas (2001) also analyzed the response of stock and bond prices to the announcement of Dubai Investments Park (DIP) that it received financing. It was noted that new financing in the case of financial default is appropriate and leads to positive results that affect stock and bond prices.

The United Nations Commission on International Trade Law (UNCITRAL) has paid great attention to the stalling of projects and ways to provide the means that would help to save projects from their difficulties. Its efforts resulted in the issuance of the UNCITRAL Model Law on Insolvency. In the guide issued on this law in 2009, the Commission pointed to the importance of providing access to financing for troubled companies. Based on this, countries have sought to strengthen their commercial and economic legislative systems with means to support Troubled projects, in order to save them recover. This resulted in the transformation of laws governing the failure of merchants into means of assistance and support for Troubled projects, and not legislation for the purpose of removing the trader and the Troubled project from the business life. The Saudi legislator followed this approach and issued a New Bankruptcy Law in 2018. The Saudi legislator used preventive settlement, financial rehabilitation, and liquidation as means of support for Troubled projects. Chapter (10) regulated the financing of Troubled projects. Based on this Chapter, it regulated how the Troubled project obtains financing, and defined the types of financing, and the court's authority to approve or not approve
the financing, so, the troubled project can request a Loan even during preventive settlement, financial rehabilitation.

Therefore, the study will focus on financing Troubled project, as it is a fundamental means to recover Troubled business projects, or in other words, to revive them and restore confidence in them again, and to reintegrate them into the economic system.

STUDY PROBLEM

The study problem consists of two problems; First Problem, is that financing a non-Troubled project is not easy, so it is natural that financing a Troubled project is more difficult and may reach the point of impossibility. Therefore, the first problem is financing a Troubled project. Second Problem, is that despite the existence of a legislative regulation for funding troubled projects in the Kingdom of Saudi Arabia since 2018, there are no judicial rulings that have addressed the financing of a Troubled project. The lack of judicial applications (published) deepens the problem even more.

METHODOLOGY

The study followed the descriptive analytical comparative approach. The descriptive approach will be used to address the means of recovering the projects from the difficulties, and in particular their financing, and to analyze the legal texts governing this financing, and thus to address its controls. Due to the novelty of the regulation in Saudi law, and the absence of judicial rulings through which the problems of application can be extrapolated, the comparative approach will be relied upon, where the financing of Troubled projects in the American Bankruptcy Law will be addressed, and thus the comparative approach will be used.

DISCUSSION

1. What is the Troubled project?

The business project is considered to be a Troubled project if it faces temporary circumstances that have affected its results, but it has the potential to reform its course and recover from its difficulties if the necessary financial reasons and resources are available (Havelka et al., 2006). Some have defined troubled companies as companies that are unable to meet their debt obligations at their inception (Mba, 2019). Others have defined financial distress as a decrease in revenue flow, and the possibility that the owners of the business project will be unable to pay its expenses, especially its debt burdens. If these qualities are present in a project, it can be described as a Troubled project (Gordon, 1971). Financial distress of the project may be caused by a number of financial reasons, such as an imbalance in the balance between the financial investments of the company that runs the project and the paid-up capital, which leads the company to borrow at high interest rates to cover the shortage of financial liquidity for the Troubled business project (Sidak et. al. 2020). The cost of administrative expenses for the business project may also increase, which is due to the increase in salaries and wages for workers in the business project (Gordon, 1971).

It is worth noting that UNCITRAL has been extremely thoughtful in the failure of projects and the ways of providing the means that would help projects to recover from their hardship, and this is evident from its issuance of the UNCITRAL Model Law on Insolvency (UNCITRAL, 2009). In the UNCITRAL Practice
Guide on Cross-Border Insolvency Cooperation 2009, it referred to the importance of providing troubled companies with financing, as it expressed it as follows: “Access to funds to enable them to continue to pay for essential supplies of goods and services, including labour costs, insurance, rent, property maintenance, contracts, and other operating expenses, as well as costs associated with maintaining the value of their assets.” (UNCITRAL, 2009)


The mere fact that a project has fallen into financial difficulty does not mean that it will be liquidated immediately. On the contrary, comparative legislations seek to grant Troubled projects the opportunity to reorganize their affairs in order to continue their calculated presence in the market (Sidak et. al., 2023). Therefore, any project enters into any of the bankruptcy procedures requires the appointment of an administrator for this procedure, as stated by the Saudi Bankruptcy Law, for example. This administrator is allowed by law to continue managing the project and making its commercial decisions. In this regard, he enjoys the rights and powers of a guardian under the Bankruptcy Law. Therefore, the debtor and the procedure officer shall try to continue the activity of the project, and it may be necessary to arrange for financial liquidity in order to continue the productivity of the project, especially if the project is expected to exit its financial crisis through the reorganization of its financial and operational matters (Triantis, 1993). In this case, the debtor proceeds to obtain financing, he shall either obtain the approval of the creditors or obtain the permission of the court for this financing, after verifying that the creditors’ debts will not be negatively affected by the required financing (Dolny, 2023) (Triantis, 1993). The competent court is responsible for assessing the suitability of the proposal submitted by the debtor (Norley et al., 2001) (Iheme, 2020).

The American Bankruptcy Code, Chapter (11), addresses the means by which Troubled projects can be saved from their difficulties in order to protect them from bankruptcy. This is done by enabling the Troubled project to reorganize its financial situation in a way that allows the project to overcome the difficulties that have affected it. Some (Bowles et al., 1997) have argued that Chapter (11) is the best that comparative legislation has achieved in terms of supporting Troubled projects. The basis for these means provided for in Chapter (11) is that the value of a Troubled business project can sometimes be greater after it has been reorganized and removed from its Troubled state than it would be if it were sold as separate assets. For this reason, the aforementioned law has granted a set of mechanisms that enable troubled projects to overcome their troubled state.

By examining the paragraph 5 of Article 1123 of Chapter 11 of the American Bankruptcy Code, it can be concluded that the American legislator has provided all the appropriate ways that enable the troubled project to overcome the difficulties that have affected it, such as transferring all or any part of the project’s assets to

---

1 (5) provide adequate means for the plan’s implementation, such as—
(A) retention by the debtor of all or any part of the property of the estate;
(B) transfer of all or any part of the property of the estate to one or more entities, whether organized before or after the confirmation of such plan;
one or more entities, merging the debtor with one or more persons, modifying any lien, modifying or terminating any contract that the Troubled project has previously entered into, extending due dates or modifying interest rates.

On the other hand, the Saudi legislator has introduced a mechanism within the mechanisms for protecting Troubled business projects from bankruptcy. According to Article 182 and 183 of the Bankruptcy Law, the legislator has allowed Troubled business projects to request new financing, despite their troubled financial position. This is on the basis that securing the necessary liquidity for the project through new financing will help it to continue its operations.

3. Banking and non-banking financing and its role in recovering the Troubled project.

The regulation of the financing of Troubled projects is a relatively new, especially in Saudi law. Article 182 and 183 of the Bankruptcy Law allows Troubled projects to request new financing, despite their Troubled financial position. Some believe that the purpose of this regulation is to enable the debtor to offer incentives to lenders in the form of a high priority, which would otherwise prevent lenders from providing their financial support (Triantis, 1993).

New financing can be obtained internally or externally. Internal sources of new financing include capital contributions from current shareholders, the disposal of assets or the withdrawal of investments, loans from shareholders, or even through funds contributed by the company, represented by the reserves that the company has accumulated over time from its profits. At the external level, troubled borrowers may issue shares, obtain loans, issue bonds or other forms of debt instruments (Mba, 2019), also the partnership between public-private is important for funding troubled projects (Avena & Grasis, 2023) (Dolny, 2023). The principle of a socially responsible state entails the obligation to formulate sustainable and balanced policies that promote public welfare while considering the interests of both the public and private sectors (Palkova & Abuseridze, 2020). Based on these principles, countries are more likely to thrive in a rules-based, rather than power-based system, which increases the possibility of financing projects in general (Abuseridze, 2023).

Some banks are reluctant to provide the necessary Loan for troubled projects due to the state of distress in which the project is found. However, financial institutions have expanded their financing of Troubled projects, and a large number of banks now have specialized departments for financing companies in bankruptcy. (Triantis, 1993; Mba, 2019) The studies show that several crowdfunding projects successfully collect money even if the expected interest is low (Avena & Grasis, 2023) Studies indicate that Chemical Bank, which merged with Manufacturers Hanover, is one of the entities that have specialized in this area of financing (Moore, 1990).

(C) merger or consolidation of the debtor with one or more persons;
(D) sale of all or any part of the property of the estate, either subject to or free of any lien, or the distribution of all or any part of the property of the estate among those having an interest in such property of the estate;
(E) satisfaction or modification of any lien;
(F) cancellation or modification of any indenture or similar instrument;
(G) curing or waiving of any default;
(H) extension of a maturity date or a change in an interest rate or other term of outstanding securities;
(I) amendment of the debtor’s charter; or
(J) issuance of securities of the debtor, or of any entity referred to in subparagraph (B) or (C) of this paragraph, for cash, for property, for existing securities, or in exchange for claims or interests, or for any other appropriate purpose;
If Troubled projects resort to offering shares, if the company allows it, to increase its capital through subscription to additional shares of the company, the company will face a problem that the market value of the company's shares has decreased due to the company's financial situation. Therefore, financing with shares may not achieve the goal that the Troubled project aspires to achieve (Lewis, 1994; 2004). However, pumping new financing for the Troubled project in shares can provide the money that Troubled projects need. It is worth noting that new shares enjoy an important advantage as a source of financing for troubled businesses, as the new funds that enter the capital structure of troubled businesses as equity do not require the payment of interest, as is the case with loans (Sidak et. al., 2023). The borrower is not obliged to pay loan service payments and the debt that will be provided against the loan is usually higher to reflect the risks of lending, a situation that can make the borrower more vulnerable to bankruptcy (Collard, 1994).

Despite the possibility of increasing liquidity through capital subscription, especially in the case of subscription by the company's shareholders or owners of shares therein, shareholders or owners of shares may resort to lending the company, because the legal position of the lender is different from the legal position of the shareholder (Engert, 2004), especially if the shareholder lender-in the form of subscription to bonds-provided a secured loan from the debtor (Dolny, 2023).

The British and American courts have considered the extent to which it is permissible for the chairman of the board of directors of a troubled company to lend the company in a dispute that was heard by the British courts Matthew Ellis & Co. Ltd. [1933] 458, the facts of which are summarized in the lender (the chairman of the board of directors of the debtor) granting a loan to the debtor to purchase goods and taking a floating charge on the debtor's assets. The English court in this case decided that no fault in the granting loan also from the court point of view the security interest held by the chairman of the board was not flawed. Note that although this issue was recognized as an area for reform by the Cork Commission (Britain et al., 1982; Mba, 2019) (Alshammari & Sadeq, 2023).

In the case of Taylor v. Standard Gas v. Electric Co. (Deep Rock), the court developed the equitable principle that became known as the “Deep Rock doctrine.” This doctrine, in its entirety, requires a controlling shareholder to provide credit to the debtor on the basis that the debtor's insolvency arose from a lack of capital and mismanagement by the controlling shareholder (Mba, 2019).

In the same context mentioned in the case of Taylor v. Standard Gas v. Electric Co. (Deep Rock), the US Supreme Court explained the basis of subordination leading to the idea of being obliged to provide credit to the debtor in the case of Pepper v. Litton, where it went on to say that even in the absence of fraud, shareholder/debtor control, or lack of capital, the company's claim may be subordinated if the shareholder breaches the fiduciary duty owed to the shareholders and other creditors) (Mba, 2019).

However, this approach is difficult to accept under Saudi Companies Law. Either the controlling party mismanages the company and bears personal liability, or the opposite, and the company therefore is responsible for its debts because the source of the obligation to provide credit is the contract.

In Bankruptcy Law, the Saudi legislator adopts three basic means to deal with Troubled and bankrupt projects which are preventive settlement, financial reorganization, and liquidation. In turn, the aforementioned law differentiates in dealing with debtors between large debtors and small debtors. The three means indicated herein were divided into seven means due to dividing debtors into large and small debtors. Therefore, the means adopted by the Saudi legislator to deal with Troubled projects are divided, concerning the debtor, into seven means. These are preventive settlement, preventive settlement for small debtors, financial reorganization, financial reorganization for small debtors, liquidation and liquidation for small debtors, and administrative liquidation.

Article 182 of the Saudi Bankruptcy Law explains the mechanism of dealing with Troubled projects that need financing to be covered. The financing was divided into three sections, prevention and permission by type of financing and type of procedure. The aforementioned Article stipulates that:

I. The Debtor shall not obtain secured financing after commencing any of the bankruptcy proceedings except after the Court's approval in accordance with the provisions of the Law.

II. Unsecured financing shall not be obtained after the commencement of the liquidation or liquidation procedures for small debtors except after the approval of the Court in accordance with the provisions of the Law.

III. Secured or unsecured financing shall not be obtained after the commencement of the administrative liquidation procedure."

Based on the foregoing, financing for Troubled projects is divided into two types, secured financing and unsecured financing. For Secured Financing, the approval of the competent Court is required as long as the project has opened one of the following six procedures against it, except with the approval of the Court. These procedures are preventive settlement, preventive settlement for small debtors, financial reorganization, financial reorganization for small debtors, and liquidation and liquidation for small debtors. Secured or unsecured financing shall not be requested in the event of administrative liquidation according to the provision of the Article 182 (3).

For Unsecured Financing, the approval of the Court is not required if the project initiation to any of the following procedures (preventive settlement, preventive settlement for small debtors, financial reorganization, and financial reorganization for small debtors). Therefore, unsecured financing in the event of liquidation or liquidation procedures for small debtors requires the approval of the competent Court.

On the other hand, Article 364 (c) of the United States Bankruptcy Code allows the court to allow "access to credit or incurring debts" by the court if the debtor is unable to obtain unsecured credit. This paragraph

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1 The Bankruptcy Committee defined the status of a small debtor as “if the debtor’s total debts do not exceed two million riyals, he is considered a small debtor and has the right to initiate this procedure.” https://bankruptcy.gov.sa/ar/KnowledgeCenter/FAQ/Pages/debtor.aspx?qid=q-14
permits obtaining credit or incurring debt under one of three terms: (1) Post-petition credit or debit shall have priority over other administrative expenses; (2) Post-petition credit or debit is secured by a lien on unpledged property; or (3) the post-petition credit or debit is secured by a small lien on the pledged property. If the debtors are unable to secure credit under (c), the Bankruptcy Court may authorize them to obtain credit or assume a debt of older or equal lien on the pledged property if the lien holder on the property is adequately protected.\(^1\)

Article 364 (e) of the U.S. Bankruptcy Code prohibits challenging the refinancing plan. Therefore, if the refinancing plan is approved as part of the financial restructuring of the project, the financing plan shall not be appealed, as American judgments have established that “Articles 364 (c) & (d) permit only certain types of procedures or liens to obtain post-petition credit or financing and Article 364 (e) only protects the validity of a lender's post-petition debt and/or certain priorities and liens. Therefore, before this court decides that Article 364 (a) prohibits refinancing plan appeals, it must decide whether the terms of the refinancing plan are permissible under Article 364 (c) and/or (d).”\(^2\)

5. The legal system for secured financing of Troubled projects.

The motivation for providing new financing on a secured basis to a troubled company is essentially the same reason for which a lender provides secured lending to healthy and untroubled companies. Security interests primarily ensure the priority of repayment to the lender in respect of certain assets of the debtor over the assets of other creditors (Baird et al., 2004). The studies show that several crowdfunding projects successfully collect money even if the expected interest is low (Avena & Grasis, 2023).

The priority of the secured creditor over other financial creditors can be justified on the basis that unsecured creditors grant a loan knowing that some assets are subject to security interests or may be subject to security interests without their permission. If certain creditors do not tolerate other creditors with security interests in the borrower's assets, they can refuse to make a loan or only provide it if the borrower agrees not to subject its assets to any security interests (Leebron, 1991).

It should be noted that for approval of secured financing, the debtor requesting financing shall prove the inability to obtain unsecured financing. The US judiciary has established that "the trustee or debtor in possession shall prove his inability to obtain the necessary credit in any way other than obtaining this credit secured by an older or equal lien on the previously pledged property.”\(^3\)

5.1. Nature of Secured Financing

Originally "all the debtor's property is a security for the payment of his debts, and all creditors are equal in this security, and no one of them has priority except by a statutory provision".\(^4\) However, such equality may result in damage to creditors if the debtor deliberately arranges debts in his financial disclosure greater than his

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\(^4\) Article 181 of the Saudi Civil Transactions Law
secured funds, which results in the bankruptcy of the project. Article 1 of the Bankruptcy Law defines a Bankrupt as "A debtor whose debts have consumed all of his assets." Therefore, the debtor may have financial assets greater than the debt at the time of borrowing from the creditor, but during the period between the arise of the debt and its maturity, the debtor created several obligations in his financial liability that exceeded in total the value of his financial assets. In that case, the creditor only recovers part of his debt as a result of distributing the debtor’s assets to all creditors, each of them according to the proportion of his debt. Therefore, to achieve the safety of creditors, Saudi law allows the allocation of a certain amount of the debtor's funds to meet a debt owed by no one.

The security interest is based on the idea of assigning a specific property, whether real or movable, as security for a specific debt. This means that if the debtor voluntarily failed to pay off this debt, the creditor may enforce the security property without fear that it may have been removed from the debtor's ownership in the period between the creation of the debt and the taking of enforcement measures, and without fear of being crowded out by other creditors in the enforcement of the security property (Peltoniemi et al., 2013).

Paragraph 1 in Article 182 of the Saudi Bankruptcy Law stipulates that “Secured financing shall not be obtained by the debtor after the initiation of any of the bankruptcy procedures except upon the court's approval, in accordance with this Law.”

Regarding the scope of secured financing, Article 183 of the Saudi Bankruptcy Law stipulates that “In a protective settlement procedure, small debtors' protective settlement procedure, financial restructuring procedure, and small debtors' financial restructuring procedure, a debtor may, after the initiation of the procedure, file a petition with the court for the approval of the secured financing, provided the petition is supported by an expert report. The court shall approve the petition if it is necessary for the continuation of the debtor’s business, or for the protection of the bankruptcy assets during such procedure.”

In order to overcome the frequency status of funding troubled projects, guarantees contribute to promoting Lenders to fund debtors, because professional lenders will not fund a project, especially if it is troubled or bankrupt, unless the availability of guarantees provides sufficient security for the Lender (Tabb, 1986). Occasionally, a troubled company could lack the available assets through which it can arrange a guarantee for a new Lender. This is conceivable when the Lender is overindebted. When there are no assets available, the Lender shall provide secured loans to new Lenders. The new Lender may remain interested to provide financing as a result of the higher interest rates obtained by this lending. This lending is highly profitable for the Lender in terms of higher interest rates and charged fees compared to normal lending to non-troubled companies (Qi, 2006).

Article 364 of the United States Bankruptcy Code stipulates that the Troubled project obtain financing. Whereas, an unsecured financing mentioned in paragraphs "A" and "B", while a secured financing mentioned in paragraphs "C" and "D". Originally, Article No. 364 stipulates that the financing is unsecured; this is evidenced by reading part of paragraph "C" of the aforementioned Article. However, the aforementioned
Article required the Court’s approval of the secured financing after notice and a hearing. This financing accorded to priority for administrative expenses or super-priority (Triantis, 1993).

5.2. Conditions to consider the financing secured.

Article 184 of the Saudi Bankruptcy Law stipulates that “Financing shall be deemed secured if:

a. It has priority over unsecured debts at the time of filing the petition for financing.

b. It is secured by pledging a debtor’s asset that is not encumbered by another pledge.

c. It is secured by pledging a debtor’s asset that is encumbered by another pledge of a higher priority.

d. It is secured by pledging a debtor’s asset that is with a higher or equal priority to another pledge if the court establishes that the rights of the pledgee holding the existing pledge are not affected, or if the pledgee consents to the existence of another pledge of a higher or equivalent priority. The debtor must ensure the protection of the pledgee’s rights in the existing pledge to ensure the satisfaction of the pledgee’s rights from the pledged property, including protection from a decrease in the value of the pledged property, the pledging to others of assets subject of the existing pledge, or the debtor's use, sale, or lease of the pledged asset while pledged.

Paragraphs "C" and "D" of Article 364 of the United States Bankruptcy Code stipulates that the guarantees that can be provided to fund the Troubled project, which are:

(c) If the trustee is unable to obtain unsecured credit allowable under section 503(b)(1) of this title as an administrative expense, the Court, after notice and a hearing, may authorize the obtaining of credit or the incurring of debt.

(1) With priority over any or all administrative expenses of the kind specified in section 503(b) or 507(b) of this title.

(2) Secured by a lien on property of the estate that is not otherwise subject to a lien; or

(3) Secured by a junior lien on property of the estate that is subject to a lien.

(d)

(1) The Court, after notice and a hearing, may authorize the obtaining of credit or the incurring of debt secured by a senior or equal lien on property of the estate that is subject to a lien only if—

(A) The trustee is unable to obtain such credit otherwise.

(B) There is adequate protection of the interest of the holder of the lien on the property of the estate on which such senior or equal lien is proposed to be granted.

(2) In any hearing under this subsection, the trustee has the burden of proof on the issue of adequate protection."

It is argued that the Court may authorize the Debtor to issue a debt secured by an equal or higher lien on the pledged assets. When all of the debtor's assets are pledged, this arrangement is typically proposed by debtors in possession. However, this is frequently opposed by the impacted secured creditors. As well as the debtor shall prove that the project is unable to obtain credit in any other way, (Dolny, 2023) in addition to that the interest of the creditors exists and is preserved despite this required credit (Triantis, 1993). This opinion is
consistent with Paragraph's "D" content of Article 184 of the Saudi Bankruptcy Law. In order to arranging a guarantee equal to or higher than previous pledges, the debtor shall prove to the Court that the pledgee’s rights in the current pledge will not be affected. It is an almost impossible hypothesis for the debtor because the imposition is that the debtor creates a new guarantee on its money that it previously provided as a guarantee for previous debts. Therefore, the previous creditor will be affected by the priority of the new creditor. Unless the debtor has other money that is not pledged for creditors, it has pledged money for a debt and the financing provider has decided that its debt shall be pledged with the money previously pledged. In order to achieve security for the first creditor in fulfilling its debt with the same priority that was available to him, the debtor can prove to the Court that the first creditor has priority in transferring another money. The only thing that will be transferred to another money with the same priority is its guarantee. There is another hypothesis addressed in Paragraph "D" of Article No. 184 of the Saudi Bankruptcy Law, which is that the creditor in the current pledge (i.e., the first) agrees to the existence of a pledge with a higher priority or equivalent to its priority over its pledge.

5.3. Secured Financing Are Being Applied to the Judiciary.

Article 183 of the Saudi Bankruptcy Law stipulates that “In a protective settlement procedure, small debtors' protective settlement procedure, financial restructuring procedure, and small debtors' financial restructuring procedure, a debtor may, after the initiation of the procedure, file a petition with the court for….”. It is clear from the previous text that the Competent Court shall approve secured financing. It also stipulates that the Court shall accept the request, therefore, the request shall include a report from an expert approved by the Court, in addition to the necessity of the invocation that the financing is necessary for the continuation of the debtor’s procedures or the preservation of the bankruptcy assets.

Section 364 of the United States Bankruptcy Code stipulates that in order to provide financing to Troubled projects. Additionally, it stipulates that the Bankruptcy Courts shall investigate the relationship between financing patterns and investment incentives. The Court will examine an important matter, which is the impact on the troubled company of both the high investment incentives and the lack of investment. The Court will examine an important matter, which is the impact on the troubled company of both the high investment incentives and the lack of investment (Triantis, 1993). The Troubled project will seek to provide investment incentives to attract financing, these incentives may affect the creditors rights. Therefore, the Court shall verify the impact of new investments on the rights of previous creditors. In order to prioritize project lenders after difficulty as a method of incentive, Courts shall be able to distinguish between financing solutions provided by the debtor in possession that enhance the value of the business and those that redistribute project assets across classes of investors and stakeholders.
Paragraph "C" of Section 510 of the United States Bankruptcy Code stipules that "the Competent Court shall be entitled to hear bankruptcy disputes of the authority, to rearrange the liens on the debtor's funds." Thereafter, according to the aforementioned text, the Court can cancel the creditor's lien and assign it to the general guarantee of the creditors.

The Competent Court to consider the financing request shall determine if the debtor's financing is effective and leads to maximizing the value of the company, or if the debtor's requested financing will not lead to maximizing the value of the company. The court shall verify whether the project faces a problem of lack or increase in investments and investments’ level. In other words, the court shall verify whether the project has investments or not. If the project does not have investments, investment incentives shall also be provided to attract investors. If the project has investments and yet the project troubled, these elements shall be evaluated through the following factors: the level of difficulty (i.e., the difference between liabilities and assets), the risks of the projects available to the company, whether the lender was the same before or after bankruptcy and whether the company intended to give the lender a high priority (Triantis, 1993). Using crowdfunding as a funding tool can support the projects (Avena & Grasis, 2023).

6. Cross-Guarantees in the United States Judiciary to rescue Troubled Projects: -

The study is targets Saudi law - which is somewhat modern - in providing the methods that enable Troubled projects to obtain financing. However, this modernity affected the practical applications of the Saudi Bankruptcy Law's provisions regulating the financing of Troubled projects. Whereas, the researchers searched at all 2213 rulings that are published on the Saudi Ministry of Justice's website² on the application of Bankruptcy Laws. They failed to find any ruling that deals with a Bankruptcy Court's review of a financing request for a Troubled project. Accordingly, to support the comparative aspect of the study and to maximize its results, we discuss cross-guarantees and their applications in the United States judiciary, considering that they are considered a close application of the text of Paragraph "D" of Article 184 of the Saudi Bankruptcy Law.

The cross-guarantees are defined as the process of using an asset that represents guarantee for a loan as guarantee for a second loan. If the debtor is unable to pay the scheduled instalments of either loan on time, the affected lenders can eventually be forced to liquidate the asset and use the proceeds for repayment (Dingová et al., 2014). The other argued that the use of cross-collateralization to obtain financing after bankruptcy led to the creation of a disagreement between the judicial rulings and jurisprudence in their notes that are related to rulings. Some Courts approved financing orders based on cross-guarantees (Bohm, 1985). The Eleventh Circuit Court of Appeals in the United States of America ruled in the Adams Apple³ case that credit is extended

1 (1) under principles of equitable subordination, subordinate for purposes of distribution all or part of an allowed claim to all or part of another allowed claim or all or part of an allowed interest to all or part of another allowed interest; or (2) order that any lien securing such a subordinated claim be transferred to the estate.

2 https://www.moj.gov.sa/ar/Ministry/Departments/ResearchCenter/Pages/AlaflasCourtDoc.aspx

during the debtor's appeal in compliance with the cross-guarantees provided by the Bankruptcy Court under Article 10.

One American judgment stated that “cross-guarantees” is a term that describes the process whereby a lender providing funds to a bankrupt debtor obtains a security interest over all of the debtor's assets, whether for the new funds provided or the lender's prior indebtedness. In other words, “cross-guarantees” means that the debtor's equity in the pre-petition assets is used to secure the post-petition obligation to the creditor, and the debtor's equity in the post-petition assets is used to secure the pre-petition obligation to the creditor. In the event of liquidation and it follows, both prior and subsequent obligations are paid before the unsecured debts.¹

On the other hand, in a judgement by the Second Circuit Court of Appeals², the court criticized the “cross-guarantees” in the Texlon case. But the court stopped short of banning this practice completely. At issue was the Bankruptcy Court's unilateral financing order granting the lender a security interest in the debtor's property to secure pre-petition and post-petition debts. The court concluded, “However, in order to decide this issue, we are not obligated to say that under no conceivable circumstances can ‘cross-guarantees’ be permitted.” Suffice it to say that...the financing scheme is completely inconsistent with the spirit of the Bankruptcy Law, as it shall not be granted by a unilateral order, as the Bankruptcy Court relies only on the declarations of the debtor who possesses that necessary credit. It is worth noting that the approach taken by the court in the aforementioned case was in light of the previous American bankruptcy law, which expired on October 1, 1974 AD, which is the date on which the new American Bankruptcy Code entered into force.

It is worth noting that the judicial judgements provided a definition of “cross-guarantees”, as one of the judgements states that “cross-guarantees” are “in exchange for providing new loans to a debtor in possession under Chapter 11, the financing institution obtains a security interest on all of the debtor’s assets, whether those existing at the date of the order or those established during Chapter 11 procedures, not only on new loans whose authenticity is undisputed, but also on its existing indebtedness”³. In another recent judgement, the Court defined “cross-guarantees” as “The practice of securing a pre-petition debt through a post-petition loan to the debtor is known as “cross- guarantees”.”⁴

In this sense, “cross-guarantees” are considered a great incentive for previous creditors to provide new financing to the debtor, especially since the creditors shall be granted a lien on all of the debtor’s funds, and in application of this in a case whose facts are that Saybrook Manufacturing Co., Inc., and related companies (the Debtors), They commenced proceedings to obtain financing under Chapter 11 of the Bankruptcy Law on December 22, 1988. On December 23, 1988, the Debtors filed a motion to use cash collateral and to authorize the use of secured debt. The Bankruptcy Court issued an emergency financing order on the same day. At the

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time of the bankruptcy petition, the debtors owed Manufacturers Hanover approximately $34 million. However, the value of the guarantees for this debt was less than $10 million. Under the order, Manufacturers Hanover agreed to loan the debtors an additional $3 million to facilitate their reorganization. In exchange, Manufacturers Hanover obtained a security interest in all of the debtors’ property—both properties owned before the bankruptcy petition was filed and those acquired later. This security interest not only protected $3 million of post-petition credit, but also secured the Manufacturers Hanover' $34 million pre-petition debt.¹

The Georgia District Court judgement² states that there are at least two types of cross-guarantees (1) pre-debt cross- guarantees with post-petition assets, also known as “forward cross- guarantees”, and (2) cross-guarantees of post-petition debt with pre-petition assets. The first type of cross-guarantees is strongly criticized as preferential if the claim of the advance lender obtaining the forward cross-guarantees is unsecured. The second type of cross-guarantees is entirely appropriate in the context of a post-petition loan as long as any existing creditor whose collateral is pledged by an equal or significant lien in favor of the lender is adequately protected as required under Article 364 (d)(b) of the Bankruptcy Law. Regarding the suitability of a pre-petition creditor to make a post-petition loan and guarantee the new loan with pre-petition and post-petition assets, this type of cross-guarantees is authorized under Article 364 (c)(2) and (d)(1) because these sections allow a lien on “property of the estate” to secure a post-petition loan. In Section 541 (a)(1) and (7), the law defines estate ownership “to include all legal and equitable interests of the debtor in the property as of the commencement of the case and any interest in the property acquired by the estate after the commencement of the case.”

The effect of forward cross-guarantees is to transfer post-petition assets that may be available for payment to ordinary unsecured creditors.³

The financing granted under Article 364 represents an important guarantee for the lender, as it enables it to recover its debt from the guarantees provided with priority over other creditors, as it was stated in a judgement issued by the Middle District Court in the State of Florida that “The Southpoint financing order also granted South Point a superior priority administrative claim under Law No.11 US Law 364(c)(1):

The Debtors’ obligations to repay [South Point] the Financing Amount shall be granted "super-priority administrative expense status" under Article 364(c)(1) of the Bankruptcy Law, and trump any other claims under Article 364(c)(1) of the Bankruptcy Law, priority over all other claims against the Debtors, now existing or hereafter arising, of any kind, including, but not limited to, all administrative expenses of the kind specified in Sections 503(b) and 507(b) of the Bankruptcy Law (“Priority Claim”), without any proof of claim having to be filed. The Priority Claim filed by [South Point] shall be entitled to the full protection of Article 364(e) of the Bankruptcy Law if this Order is reversed or any provision thereof or modified, on appeal or otherwise.”⁴

The judiciary’s judgements on the priority system in demanding debt recovery commented that it constitutes a cornerstone in the practice and organization of financial reorganization.¹

7. Evaluating the effectiveness of funding troubled projects in the Saudi Bankruptcy Law

There is no doubt that funding troubled projects in the Saudi Bankruptcy Law is a good regulation, as it provides a legal basis for lenders to provide their financing to troubled companies. However, from the researchers’ point of view, this regulation needs some improvements to reach the results it aims to achieve, because, basically, obtaining financing for a non-faltering project is not an easy matter and undoubtedly requires guarantees from the proposal, and the loan provider shall verify the availability of internal resources for the project capable of servicing the loan, considering that the guarantee provided to secure the loan is a reserve guarantee, while the basis is for the project to generate self-resources that enable it to service the loan and fulfill its obligations.

If this is the case for a non-Troubled project, how it would be for a Troubled project, which suffers from a lack of trust from his clients' mistrust and inability to meet its debts; By extension, there is a lack of cash, so it is almost impossible. This is evidenced by the fact that Saudi judicial judgements published over four years did not refer to an application for financing to the Bankruptcy Court and at our discretion, if we recognize the importance of cash liquidity for any project, as well the financing is one of the means of achieving that liquidity. However, it is inconceivable that legislative regulation shall solve unilaterally the crisis of project financing in general and the financing of Troubled projects in particular. Because if we are looking for a solution to a Troubled project to manage liquidity for its revival, it is first and foremost one project and it is not logical to introduce a financed project to finance an unthinkable project so that ultimately the result is that we are in front of both a lender and a borrower that are struggling, There shall therefore be an increasing cycle of project default and bankruptcy, which is not targeted by the project, and the solution in our estimation lies in two things:

First: Establishing a fund to support Troubled projects, which shall be as close as possible to social security, so that it is received from contributions paid by the companies themselves, under the authority of the Ministry of Commerce and the Ministry of Finance, and if any project providing financing from this fund is hindered. When the project is liquidated, the project receives a sum from the fund from which it shall pay its financial obligations.

Second: The State shall provide initiatives to finance Troubled projects so that the State directly intervenes in the dismissal of the troubles of Troubled projects and provides them with the necessary financing to dismiss them. The State may intervene as a partner in the project or provide the necessary financing to provide them with the necessary liquidity for the project. In fact, Saudi Arabia has some programs and initiatives that concern

https://casetext.com/case/czyzewski-v-jevic-holding-corp
the financing of Troubled projects, especially in the agricultural, health and education sectors. Some of these programs and initiatives are:

- **Addressing Troubled projects**: is a program provided by the Agricultural Development Fund in cooperation with the Ministry of Environment, Water and Agriculture and investors wishing to invest in Troubled agricultural projects. The program provides financial, technical and administrative solutions to restart these projects and improve their productivity and quality.\(^1\)

- **Project Support Fund**: An initiative by the Ministry of Finance through the National Development Fund to finance Troubled projects in the health and education sectors. The initiative aims to stimulate investment in these sectors and provide quality health and education services to citizens.\(^2\)

### CONCLUSION

This study deals with the financing of Troubled projects in Saudi Bankruptcy Law by indicating the rules governing this means of rescuing the struggling debtor and returning him to his normal economic activity as he was before. The study compared with the United States Bankruptcy Law as one of the old laws that dealt with this method, and there were many judicial judgements applying that method. The study found several conclusions, most notably:

**First**: Business Troubled project as a business facing incidental circumstances that has influenced the results of its work, but has the potential to reform its progress and improve its troubles if there are reasons and financial resources to do so.

**Second**: The UNCITRAL at the United Nations was interested in providing the troubled companies with access to funds, as confirmed by the UNESTRAL Model Law on Insolvency.

**Third**: It does not mean that the project suffered financial hardship resulting in its stumbling over or bankruptcy that the project shall be liquidated immediately, on the contrary, comparative legislation seeks to give Troubled projects the possibility to make amends with continue its influential position in the market.

**Fourth**: The financing of Troubled projects is one of the most important means by which projects can get out their difficulties. If the debtor obtains the financing, either the creditor's consent or the court's authorization for such financing shall be obtained after the creditors have ascertained that their debts will not be adversely affected by the required financing.

**Fifth**: Regulating the financing of Troubled projects aims not only to legitimize the financing of such projects, but also to enable the debtor to provide incentives to lenders in the form of high priority, without which lenders are unable to make their financial claims to lenders.

**Sixth**: New financing can be obtained internally or externally. The internal sources of the new financing are current equity shareholders' contributions, disposal of assets or divestment, shareholder loans, or even through the funds contributed by companies to the company’s cumulative profit reserves over time. At the

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1. [https://adf.gov.sa/ar/CreditServices/TroubledProjects/Pages/default.aspx](https://adf.gov.sa/ar/CreditServices/TroubledProjects/Pages/default.aspx)
2. [https://www.mof.gov.sa/PSF/Pages/Apply.aspx](https://www.mof.gov.sa/PSF/Pages/Apply.aspx)
external level, troubled borrowers may issue shares, obtain loans, issue bonds or other forms of debt instruments.

**Seventh:** Some judgements issued by the British and American judiciary are required by the controlling shareholder of the Troubled project to provide credit to the project, considering that it is the cause of the troubles. However, that trend is difficult to accept in Saudi Companies Law either the controlling party abuses the management of the company and assigns its personal responsibility or vice versa, and the company therefore is responsible for its debts because the source of the obligation to provide credit is the contract.

**Eighth:** Guarantees play a pivotal role in incentivizing lenders to finance debtors in order to overcome the hesitancy surrounding the financing of Troubled projects, since professional lenders shall not provide financing for a private project and it is Troubled or bankrupt unless there are sufficient guarantees for the lender's security.

**Ninth:** Paragraph (d) in Article 184 of the Saudi Bankruptcy Law represents the basis for funding troubled projects due to their organization priorities over the pledged money. However, the hypothesis of the practical application here question remains to be considered as a result of the debtor's difficulty in proving to the court that the rights of the existing pledge holder shall not be affected by the new pledge. This shall be achieved only if the old pledge is transferred to new money on the basis of the imposition of new, unpledged money.

**Tenth:** The Bankruptcy Court's authority to consider the application is not discretionary for three conditions; I) Do not prejudice the existing or core creditor that seeks to arrange a higher or equal priority right for the debtor, II) Submit a report from a court-certified expert, III) It shall be shown that the financing is necessary for the debtor's continued activity or the preservation of bankruptcy assets.

**Eleventh:** Cross-Guarantees in US Code is a practical application of the text of the paragraph (d) in Article 184 of the Saudi Bankruptcy Law, and the problems encountered by the United States judiciary in applying cross-guarantees shall be the same as those that will be brought before the Saudi judiciary. However, the problem in applying the text of the Saudi judiciary remains that the previous priorities established by the debtor over its funds and related to the rights of creditors shall be respected. Otherwise, any legal value of legal guarantees and prioritization would be lost.

**Recommendations:**

**First:** The study recommends establishing a fund to support Troubled projects, to be derived from contributions paid by the companies themselves in the same way as Social Security, under the authority of the Ministry of Commerce and the Ministry of Finance, and if any project providing financing from this fund is hindered. When the project is liquidated, the project receives an amount from the fund from which it shall pay its financial obligations.

**Second:** The study recommends establishing a government fund to support Troubled projects, dividing financing priorities according to the project's relevance to the national economy, and these loans are of no interest.
Third: The study recommends adding an article of the Saudi Bankruptcy Law whereby the State will forfeit its debts for Troubled projects provided that the financial restructuring plan or the bankruptcy settlement is successful.

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Court Judgments:


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THRIVE TO REVIVE: TURNAROUND STRATEGIES OF STARTUPS IN INDIA

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ABSTRACT
In today’s fast-paced world of technology and innovation, India stands out as the third-largest startup hub globally, thanks to its favorable business environment. However, despite the promising infrastructure and support systems, many startups face challenges that lead them off course. This research focuses on understanding why startups sometimes struggle and how they can bounce back. The study explores the reasons behind these struggles and the strategies startups use to recover. Additionally, we investigate if the sector and stage of a startup play a role in determining the success of these turnaround strategies. A survey of 120 startups that underwent a turnaround, reveals that a lack of funds and changing customer preferences were significant factors influencing these situations. Interestingly, it was discovered that the healthcare sector is particularly well-suited for successful turnarounds, and these strategies are more effective during the growth stage of startups. The findings provide practical insights for startups, helping them tailor their turnaround strategies based on their unique business nature and developmental stage. This research not only contributes to the academic understanding of startup challenges but also offers a useful guide for entrepreneurs navigating the ups and downs of their business journey. In the past few years, startups and unicorns have become the talk of the town, marking a major breakthrough in this decade. Globally, we’ve witnessed a surge in startups popping up everywhere, and India has been at the forefront of this exciting trend. While the term “startup” used to be synonymous with Silicon Valley giants like Facebook and Google, things have changed with the evolving world. Now, India proudly holds the third spot in the global startup ecosystem, following only the United States and China. This evolution has had a significant impact on India’s economy over the last two decades.

Keywords: Start-ups, entrepreneurship, turnaround
JEL classification: L26, M10, M13
Paper Type: Research Article

INTRODUCTION
Startups and unicorns have been the buzz words for couple of years, as this decade has witnessed a massive breakthrough, where large number of startups making its presence in every geographical boundaries. We have come across the rise and fall of startups from different parts of the globe, same as the story of India as well. The word startup is often connected with silicon-valley in the US, as it witnessed the rise of so many notable startups like Facebook, Google etc. However, the known stories of startups being the monopoly of US have been evaded with the rapidly changing world dynamics. Now India has been ranked third among the global list of countries with largest startup ecosystem after US and China. The Indian startup ecosystem have evolved over the last two decades marking a significant impact over the progress of economic development.
In order to give a timeline on the growth of startups, the major turning point has been witnessed in 1980’s which was the time when Rajiv Gandhi introduced liberalization of computer industry. Apart from this, NASSCOM was also launched during 1980s, which really created a foundation for digital industry in India. Further, few startups emerged during late 1990s which ended with the bust of dot-com bubble issue. Moreover, the broadband penetration, internet connectivity and support mechanisms were low during that period.

Later, The Great Recession which have been observed in the year 2008 which brought all the economies to their knees and the companies across the world started downsizing their employees. The fear of employees in losing their jobs also impacted the IT sector in India. This has been an eye-opener for many professionals to deviate their role from job seeker to job giver. Hence, many notable startups like Policy Bazaar, Zomato etc. were founded during this period. However, the major turning point in India’s startup funding scenario was viewed when Flipkart, a Bangalore- based ecommerce startup received its first investment of ten lakhs in the year 2009. Next few years, the emergence of numerous startups, incubators, accelerators and support agencies took place and grows at a faster pace (Bagaria, 2020).

Over a half decade (2009-2014), India has been showing a great appetite for technology and innovation. The internet has opened its way for a sizable number of startups to escalate over the past few years, addressing the burning problems and thereby transforming potential ideas into valuable outcome. Now, India has about 50,000 startups as per the 2018 report around 8900-9300 of these were technology driven startups. Despite of this, 1300 new tech startups were born in 2019 alone, stating that there are 2 or 3 startups being stemming on everyday basis (Korreck, 2019).

Contrarily, for every Flipkart, Paytm, Oyo and Zomato there are countless other startups that failed to survive in the light of tight competition and risk and thereby ending up in failure. (Bagaria, 2020). Sustaining a startup is perhaps the most difficult phase for any entrepreneur. While everyone advocates entrepreneurship as a shortcut to mint money and get rich scheme, the uncertainty and constant pressure to perform a huge responsibility even for the toughest of individuals. According to the statistics, more than 5 million start-ups are founded every year. However, only 10 % of these startups succeed in the long run.

Just like the general saying ‘Health is wealth’, the wealth of a business is determined through its health. Therefore, whenever the business feels like ailing, it should transform its weakness to strength. And here comes the relevance of turnaround, as it is essential for those business which are in the verge of decline owing to poor performance.

**LITERATURE REVIEW**

Turnaround situations in organizations often result from both external challenges and internal management shortcomings (Bibeault, 1982; Pearce & Robbins, 1993; Jarmusevica et al, 2019; Iliev et al, 2023; Petrova & Tairov, 2022). The turnaround process, as described by Bibeault (1982), involves preventing downturns, pursuing profitability through altered resource commitments, and exploring new avenues for growth. Bruton and Rubanik (1997) define turnaround as the reversal of a firm’s declining performance, emphasizing the need
for a strategic shift to regenerate business. Schendel et al. (1976) laid the groundwork for understanding the causes of turnaround situations and their impact on selecting appropriate strategies. Hofer (1980) further contributed by emphasizing the severity of the turnaround situation and the importance of selecting suitable strategies. Empirical testing by Hambrick and Schecter (1983) supported these notions. Suzuki (1985) identified key turnaround strategies, including top management replacement, financial strategies (such as inventory control and liquidity management), personnel strategies (workforce trimming), and marketing strategies (product and market diversification). Sloma (1985) categorized factors influencing turnaround into internal and external. External factors, proposed by Scherrer (2003), encompass increased competition, technological changes, economic fluctuations, and other external forces affecting the organization. Scherrer (2003) also outlined the stages of turnaround, emphasizing the importance of stabilizing the business within 6 months to 1 year after implementing a plan and returning to growth within 1 to 2 years. Internal factors contributing to decline, as highlighted by various scholars (Labunska, Petrova, Prokopishyna, 2017; Di Virgilio et al., 2023; Gryshova et al., 2019), include challenges like an inability to pay taxes and debts, eroding gross margins, decreased capacity utilization, high turnover of management and staff, and a lack of competence and expertise among top management. Key internal indicators of decline involve increasing inventory amid declining sales, cash flow problems, and management's inability to adapt to growth.

While existing literature extensively covers the factors and strategies associated with organizational turnarounds, there is a notable gap in the specific context of startup turnarounds, especially within the dynamic Indian startup ecosystem. Further research is needed to explore the unique challenges faced by startups during turnaround situations and the effectiveness of specific strategies tailored to their characteristics and the Indian business landscape.

METHODOLOGY
The methodology for this study centers on a concurrent triangulation strategy, amalgamating both quantitative and qualitative approaches to comprehensively explore startup turnaround strategies. A structured questionnaire, comprising 120 items, was employed for quantitative data collection, distributed electronically to a sample of 120 startups that had undergone a documented turnaround process. Simultaneously, in-depth interviews were conducted with key stakeholders and founders of these startups to obtain qualitative insights into the intricacies of the turnaround journey. This dual-method approach facilitated a more robust analysis, with quantitative data providing statistical trends and patterns through descriptive and inferential statistics, while qualitative data underwent thematic analysis to unravel recurring themes and unique narratives. The sampling strategy involved purposive selection based on willingness and availability for both survey participation and interviews. By employing this mixed-methods design, the study not only quantified the impact of turnaround strategies but also delved into the qualitative dimensions of successful startup transformations, offering a comprehensive understanding of the multifaceted dynamics involved in the process.
RESULTS
This section offers a purview on the results of analysis based on the turnaround strategies adopted by the selected startups in India in respect to the information obtained from the selected startups. And hence, the data so collected has been analysed and interpreted in a systematic and scientific manner with the help of certain statistical tools like Kendall’s W Test and Two-way ANOVA.

Stage of Startups
Like all other growing mechanisms, every business irrespective of their nature, have lifecycles and their growth has been influenced by so many factors. In the case of startups, an attempt had been made to list out the stages in which the main three stages have been showcased below;

![Figure 1. Stage of Startups](image)

Factors Causing Turnaround

<table>
<thead>
<tr>
<th>Internal Factors</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortage of Fund</td>
<td>2.38</td>
</tr>
<tr>
<td>Poor Management</td>
<td>6.98</td>
</tr>
<tr>
<td>Wrong Team</td>
<td>6.67</td>
</tr>
<tr>
<td>Pricing and Costing Issues</td>
<td>4.38</td>
</tr>
<tr>
<td>Poor Marketing</td>
<td>4.20</td>
</tr>
<tr>
<td>Improper Planning</td>
<td>2.88</td>
</tr>
<tr>
<td>Negative Cash Flows</td>
<td>3.17</td>
</tr>
<tr>
<td>Premature Scaling</td>
<td>5.34</td>
</tr>
</tbody>
</table>

*Source: Survey data*
It is observed from the table 1.1 that, shortage of fund is considered to be the most crucial internal factor causing turnaround with a mean rank of 2.38 followed by improper planning having a mean rank 2.88. However, poor management with mean rank 6.98 is figured out as the least factor causing turnaround.

<table>
<thead>
<tr>
<th>External Factors</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Competition</td>
<td>2.96</td>
</tr>
<tr>
<td>Lack of Market Demand</td>
<td>1.95</td>
</tr>
<tr>
<td>Changing Trends in Customer Wants and Preferences</td>
<td>1.68</td>
</tr>
<tr>
<td>Change in Technology</td>
<td>3.50</td>
</tr>
<tr>
<td>Legal Challenges</td>
<td>5.22</td>
</tr>
<tr>
<td>Improper Location</td>
<td>6.55</td>
</tr>
<tr>
<td>Other Environmental Factors</td>
<td>6.15</td>
</tr>
</tbody>
</table>

Source: Survey data

Table 1.2 reveals that changing trends in customer wants and preferences with a mean rank of 1.68 and lack of demand having mean rank of 1.95 are the most prominent external factors contributing turnaround in startup business. On the other hand, improper location with mean rank 6.55 is considered to be the minute factor causing turnaround.

Test of Hypothesis
H1: Turnaround Strategies of startups differs across industries.
H2: Turnaround strategies differs with respect to the stage of startups.

Turnaround Strategies Followed by Startups

Customer-Centric Turnaround Strategies

As the name suggests, prime focus have been given to customers, since they are considered to be the most crucial and valuable stakeholder of every business segment including startups. And hence, the study covers 11 customer related strategies including, identifying potential customers, identifying the needs and wants of the customers, better CRM, quick response to customer queries, fair and affordable pricing policy, ensuring quality products, efforts to sell proper product mix, better user experience, accepting negative feedback and improving, efforts to ensure quality customer service, and efforts in delivering customized products. The applicability of this strategy is presented with the help of table below;

H0: There is no significant difference between type of industry and customer centric turnaround strategies.
H0: There is no significant difference between stage of startup and customer centric turnaround strategies.
Table 2.1. Result of ANOVA Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Industry</td>
<td>92.779</td>
<td>4</td>
<td>23.195</td>
<td>3.927</td>
<td>.005</td>
</tr>
<tr>
<td>Stage of Startup</td>
<td>1.068</td>
<td>1</td>
<td>1.068</td>
<td>.181</td>
<td>.671</td>
</tr>
<tr>
<td>Error</td>
<td>673.278</td>
<td>114</td>
<td>5.906</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>767.125</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey data

Estimated Marginal Means

Table 2.2. Type of Industry

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>43.814</td>
<td>.395</td>
<td></td>
<td>43.031</td>
<td>44.597</td>
</tr>
<tr>
<td>Hardware</td>
<td>44.934</td>
<td>.647</td>
<td></td>
<td>43.652</td>
<td>46.215</td>
</tr>
<tr>
<td>Healthcare</td>
<td>45.453</td>
<td>.503</td>
<td></td>
<td>44.456</td>
<td>46.450</td>
</tr>
<tr>
<td>Edtech</td>
<td>46.316</td>
<td>.571</td>
<td></td>
<td>45.184</td>
<td>47.448</td>
</tr>
<tr>
<td>Food</td>
<td>45.178</td>
<td>.574</td>
<td></td>
<td>44.042</td>
<td>46.314</td>
</tr>
</tbody>
</table>

Source: Survey data

Table 2.3. Stage of Startup

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation</td>
<td>45.251</td>
<td>.469</td>
<td></td>
<td>44.322</td>
<td>46.180</td>
</tr>
<tr>
<td>Growth</td>
<td>45.027</td>
<td>.263</td>
<td></td>
<td>44.507</td>
<td>45.548</td>
</tr>
</tbody>
</table>

Source: Survey data

According to the table 3.1, the statistical variation of the mean score of customer centric turnaround strategies with respect to type of industry is found significant with 5 per cent level of significance (F 3.927 with p = .005 < .05) and therefore it can be stated that there exists significant difference between type of industry and customer centric turnaround strategies. As a result, the null hypothesis is rejected. But at the same time, the variation of mean score of customer centric turnaround strategies according to stage of startup is not found significant (F .181 with p = .671 > .05) and hence we accept the null hypothesis stating that, there is no significant difference between stage of startup and customer centric turnaround strategies.
On the other hand, table 3.2 shows that, the customer centric turnaround strategies are found to be more effective in edtech sector with mean 46.316 other than the rest of the sectors. Table 3.3 exhibits that, among both validation and growth stage, customer centric turnaround strategies are found more relevant in validation stage with mean 45.251.

**Product Oriented Turnaround Strategies**

Startups are best known for its freshness in idea and novel products. In the context of the study, nine different strategies related to product have been identified and that includes innovative and novel product development, creating value propositions, proper inventory management, developing a product that fit the market, redefining brand, formulating offers and concessions, naming product in different ways, timely introduction of product into the market and finally market research before developing the product. Hence, the utility of this strategy can be understood from the tables represented below.

H₀: There is no significant difference between type of industry and product-oriented turnaround strategies.
H₀: There is no significant difference between stage of startup and product-oriented turnaround strategies.

**Table 3.1. Result of ANOVA Test**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Industry</td>
<td>288.304</td>
<td>4</td>
<td>72.076</td>
<td>10.986</td>
<td>.000</td>
</tr>
<tr>
<td>Stage of Startup</td>
<td>28.702</td>
<td>1</td>
<td>28.702</td>
<td>4.375</td>
<td>.039</td>
</tr>
<tr>
<td>Error</td>
<td>747.919</td>
<td>114</td>
<td>6.561</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1064.925</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey data*

**Estimated Marginal Means**

**Table 3.2. Type of Industry**

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware</td>
<td>34.814</td>
<td>.682</td>
<td>33.463</td>
<td>36.164</td>
<td></td>
</tr>
<tr>
<td>Healthcare</td>
<td>35.241</td>
<td>.530</td>
<td>34.190</td>
<td>36.291</td>
<td></td>
</tr>
<tr>
<td>Edtech</td>
<td>33.537</td>
<td>.602</td>
<td>32.344</td>
<td>34.730</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>33.755</td>
<td>.605</td>
<td>32.557</td>
<td>34.953</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey data*
Table 3.3. Stage of Startup

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation</td>
<td>34.288</td>
<td>.494</td>
<td>33.309 - 35.267</td>
</tr>
<tr>
<td>Growth</td>
<td>33.131</td>
<td>.277</td>
<td>32.583 - 33.680</td>
</tr>
</tbody>
</table>

Source: Survey data

As per the table 3.1, the statistical variation of mean score of product-oriented turnaround strategies according to type of industry is found significant with 5 per cent level of significance (F 10.986 with p = .000 < .05) and hence it can be argued that, there exits significant difference between type of industry and product-oriented turnaround strategies. Therefore, the null hypothesis is rejected due to the diversities that exits between type of industry and product-oriented turnaround strategies. Similarly, the variation of mean score of product-oriented turnaround strategies according to stage of startup is also found significant (F 4.375 with p = .039 < .05). Therefore, the null hypothesis is rejected proving that, there is significant difference between stage of startups and product-oriented strategies.

The results in table 3.2 shows that the product-oriented turnaround strategies have better scope in healthcare sector with mean 35.241 compared to other sectors. But in the table 3.3, it is observed that among both validation and growth stage, product-oriented turnaround strategies are found more relevant in validation stage with mean 34.288.

Marketing Related Turnaround Strategies

Sometimes the performance of the startup may diminish due to the marketing activities undertaken by startups. The current study identifies certain marketing related turnaround strategies such as proper marketing plan, use of social media, identifying niche market, publicity via worth of mouth, making an exciting promise that can be delivered, wrapping a different story to the product, embracing content marketing, updating websites, organizing polls and contexts, sending personalized mail to customers, implementing marketing automation strategies and promoting the difference in the product, where the applicability of this strategy have been highlighted in the following tables.

H0: There is no significant difference between type of industry and marketing related turnaround strategies.

Table 4.1. Result of ANOVA Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Industry</td>
<td>625.539</td>
<td>4</td>
<td>156.385</td>
<td>23.835</td>
<td>.000</td>
</tr>
<tr>
<td>Stage of Startup</td>
<td>5.794</td>
<td>1</td>
<td>5.794</td>
<td>.883</td>
<td>.349</td>
</tr>
<tr>
<td>Error</td>
<td>747.967</td>
<td>114</td>
<td>6.561</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1379.300</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey data
H₀: There is no significant difference between stage of startup and marketing related turnaround strategies.

**Estimated Marginal Means**

**Table 4.2. Type of Industry**

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>38.866</td>
<td>.416</td>
<td>38.041 - 39.691</td>
</tr>
<tr>
<td>Hardware</td>
<td>41.089</td>
<td>.682</td>
<td>39.738 - 42.440</td>
</tr>
<tr>
<td>Healthcare</td>
<td>40.429</td>
<td>.530</td>
<td>39.378 - 41.480</td>
</tr>
<tr>
<td>Edtech</td>
<td>44.649</td>
<td>.602</td>
<td>43.457 - 45.842</td>
</tr>
<tr>
<td>Food</td>
<td>44.182</td>
<td>.605</td>
<td>42.984 - 45.380</td>
</tr>
</tbody>
</table>

*Source: Survey data*

**Table 4.3. Stage of Startup**

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation</td>
<td>42.103</td>
<td>.494</td>
<td>41.124 - 43.082</td>
</tr>
<tr>
<td>Growth</td>
<td>41.583</td>
<td>.277</td>
<td>41.035 - 42.132</td>
</tr>
</tbody>
</table>

*Source: Survey data*

The table 4.1 states that, the statistical variation of mean score of marketing related turnaround strategies in accordance with type of industry is found significant with 5 per cent level of significance (F 23.835 with p = .000 < .05) and hence it can be stated that, there exists significant difference between type of industry and marketing related turnaround strategies thereby leading to the rejection of null hypothesis. But on the contrast, the variation of mean score of marketing related turnaround strategies according to stage of startup is not found significant (F .883 with p =.349 > .05) and hence the null hypothesis is accepted at 5 per cent level of significance.

The results of the table 4.2 brings into notice that, the marketing related turnaround strategies have better application in edtech sector with mean 44.649 compared to other sectors. On the other hand, in the table 4.3 it is identified that among both validation and growth stage, marketing related turnaround strategies are observed more relevant in validation stage with mean 42.103.

**Technology Oriented Turnaround Strategies**

Everyday technology is going through massive advancements and updations. The study had identified five technology-oriented turnaround strategies and they are; adapting latest technology, use of online platform, use...
of professional accounting software, employing latest apps for competitor analysis and finding best technology partner respectively. The effect of technology related turnaround strategies has been outlined in the tables presented below.

H\(_0\): There is no significant difference between type of industry and technology-oriented turnaround strategies.

H\(_0\): There is no significant difference between stage of startup and technology-oriented turnaround strategies.

Table 5.1. Result of ANOVA Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Industry</td>
<td>103.849</td>
<td>4</td>
<td>25.962</td>
<td>6.815</td>
<td>.000</td>
</tr>
<tr>
<td>Stage of Startup</td>
<td>2.657</td>
<td>1</td>
<td>2.657</td>
<td>.697</td>
<td>.405</td>
</tr>
<tr>
<td>Error</td>
<td>434.286</td>
<td>114</td>
<td>3.810</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>540.792</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey data

Estimated Marginal Means

Table 5.2. Type of Industry

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Error</td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Software</td>
<td>18.213</td>
<td>.317</td>
<td>17.585</td>
</tr>
<tr>
<td>Hardware</td>
<td>17.694</td>
<td>.520</td>
<td>16.665</td>
</tr>
<tr>
<td>Edtech</td>
<td>18.548</td>
<td>.459</td>
<td>17.639</td>
</tr>
<tr>
<td>Food</td>
<td>17.977</td>
<td>.461</td>
<td>17.064</td>
</tr>
</tbody>
</table>

Source: Survey data

Table 5.3. Stage of Startup

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Error</td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Validation</td>
<td>18.374</td>
<td>.377</td>
<td>17.627</td>
</tr>
<tr>
<td>Growth</td>
<td>18.726</td>
<td>.211</td>
<td>18.307</td>
</tr>
</tbody>
</table>

Source: Survey data

The computed results from table 5.1, discloses that, the statistical variation of mean score of technology-oriented turnaround strategies in relation to type of industry is found significant with 5 per cent level of
significance (F 6.815 with p = .000 < .05). And as a result, the null hypothesis is rejected by stating that, there is significant difference between type of industry and technology related turnaround strategies. But on the other side, the variation of mean score of technology-oriented turnaround strategies according to stage of startup is not found significant (F .697 with p =.405 > .05) thereby directing to accept the null hypothesis.

Table 5.2 reveals that the technology-oriented turnaround strategies have better significance in healthcare sector with mean 20.315 compared to other sectors. The results indicated in table 5.3 summarizes that, among both validation and growth stage, technology-oriented turnaround strategies are found more promising in growth stage with mean 18.726.

**Finance Related Turnaround Strategies**

Finance is considered to be the life blood of every business so as the start-ups. The turnaround strategies related to finance include proper financial forecasting, ensuring positive cash flow, improving cost structure, increasing asset utilization, expanding revenue opportunities, finding alternative source of raising funding, focusing on liquidity, curtailing all non-essential expenses, proper budget allocation and control, disposal of non-performing assets, maintaining cash reserves, and deploying conservative growth plans. The summary of the application of finance related strategies of turnaround has been depicted in the table below.

H₀: There is no significant difference between type of industry and finance related turnaround strategies.

H₀: There is no significant difference between stage of startup and finance related turnaround strategies.

**Table 6.1. Result of ANOVA Test**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Industry</td>
<td>103.942</td>
<td>4</td>
<td>25.985</td>
<td>2.590</td>
<td>.040</td>
</tr>
<tr>
<td>Stage of Startup</td>
<td>.362</td>
<td>1</td>
<td>.362</td>
<td>.036</td>
<td>.850</td>
</tr>
<tr>
<td>Error</td>
<td>1143.688</td>
<td>114</td>
<td>10.032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1247.992</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey data*

**Estimated Marginal Means**

**Table 6.2. Type of Industry**

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>44.827</td>
<td>.515</td>
<td>43.807</td>
<td>45.847</td>
<td></td>
</tr>
<tr>
<td>Hardware</td>
<td>44.694</td>
<td>.843</td>
<td>43.024</td>
<td>46.365</td>
<td></td>
</tr>
<tr>
<td>Healthcare</td>
<td>46.922</td>
<td>.656</td>
<td>45.622</td>
<td>48.221</td>
<td></td>
</tr>
<tr>
<td>Edtech</td>
<td>44.285</td>
<td>.744</td>
<td>42.810</td>
<td>45.760</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>45.005</td>
<td>.748</td>
<td>43.524</td>
<td>46.486</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey data*
According to the table 6.1, the statistical variation of mean score of finance related turnaround strategies relating to type of industry is found significant with 5 per cent level of significance (F $2.590$ with $p = .040 < .05$) and hence the null hypothesis got rejected as there exits significant difference between type of industry and finance related turnaround strategies. But whereas, the variation of mean score of finance related turnaround strategies according to stage of startup is not found significant (F $.036$ with $p = .850 > .05$) and hence the null hypothesis got accepted at 5 per cent level of significance.

On the other hand, table 6.2 reveals that the finance related turnaround strategies have better utility in healthcare sector with mean 46.922 compared to other sectors. Table 6.3 portrays that among both validation and growth stage, finance related turnaround strategies are found more effective in growth stage with mean 45.212.

**HR Related Turnaround Strategies**

The inherent peculiarity of startups is concerned with their team members driving with passion and collective spirit. The major HR related strategies identified are improving leadership skills, establishing harmonious relationship with team members, formation of peer advisory group, giving attention to team member’s ambition, finding and placing startup savvy people, driving passion and goal to same direction, ensuring transparency in managerial actions, training and upgrading skills, encouraging participative approach, reducing burnouts via making works more interesting, hiring part timers and freelancers, ensuring individual growth and exposure and reward and bonus system. Hence the applicability of these strategies has been indicated with the help of table below.

Table 6.3. Stage of Startup

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation</td>
<td>45.082</td>
<td>.611</td>
<td>43.871-46.292</td>
</tr>
<tr>
<td>Growth</td>
<td>45.212</td>
<td>.343</td>
<td>44.533-45.890</td>
</tr>
</tbody>
</table>

*Source: Survey data*

Table 7.1. Result of ANOVA Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of industry</td>
<td>184.648</td>
<td>4</td>
<td>46.162</td>
<td>6.882</td>
<td>.000</td>
</tr>
<tr>
<td>Stage of startup</td>
<td>4.145</td>
<td>1</td>
<td>4.145</td>
<td>.618</td>
<td>.433</td>
</tr>
<tr>
<td>Error</td>
<td>764.674</td>
<td>114</td>
<td>6.708</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>953.467</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Survey data*

$H_0$ There is no significant difference between type of industry and HR related turnaround strategies.
H0: There is no significant difference between stage of startup and HR related turnaround strategies.

Estimated Marginal Means

**Table 7.2. Type of Industry**

<table>
<thead>
<tr>
<th>Type of Industry</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Software</td>
<td>46.677</td>
<td>.421</td>
<td>45.843</td>
</tr>
<tr>
<td>Hardware</td>
<td>45.599</td>
<td>.689</td>
<td>44.233</td>
</tr>
<tr>
<td>Healthcare</td>
<td>49.251</td>
<td>.536</td>
<td>48.188</td>
</tr>
<tr>
<td>Edtech</td>
<td>48.683</td>
<td>.609</td>
<td>47.477</td>
</tr>
<tr>
<td>Food</td>
<td>47.454</td>
<td>.611</td>
<td>46.243</td>
</tr>
</tbody>
</table>

*Source: Survey data*

**Table 7.3 Stage of Startup**

<table>
<thead>
<tr>
<th>Stage of Startup</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Validation</td>
<td>47.752</td>
<td>.500</td>
<td>46.762</td>
</tr>
<tr>
<td>Growth</td>
<td>47.313</td>
<td>.280</td>
<td>46.758</td>
</tr>
</tbody>
</table>

*Source: Survey data*

The computed figures in table 7.1 represents that, the statistical variation of mean score of HR related turnaround strategies according to type of industry is found significant with 5 per cent level of significance (F 6.882 with p = .040 < .05) hence stating the rejection of null hypothesis at 5 per cent level of significance. Contrarily, the variation of mean score of HR related turnaround strategies according to stage of startup is not found significant (F .618 with p = .433 > .05) and therefore the null hypothesis is accepted.

On the other hand, table 7.2 indicates that, the HR related turnaround strategies have better application in healthcare sector with mean 49.251 compared to other sectors.

Table 7.3 exhibits that among both validation and growth stage, HR related turnaround strategies are found more attractive in validation stage with mean 47.752.

**DISCUSSION**

The study identifies critical factors contributing to turnaround, distinguishing between internal and external elements. Shortage of funds emerges as a pivotal internal factor, while shifting customer preferences stands out as a prominent external factor influencing turnaround. Customer-centric turnaround strategies exhibit greater efficacy in the edtech sector, emphasizing the sector's dependence on potential customers for demand generation. Notably, these strategies prove relevant in both the validation and growth stages. Conversely,
product-oriented turnaround strategies show promise in the healthcare sector, leveraging quality products and services for global market penetration. The study highlights the significance of in-house marketing-related turnaround strategies for edtech companies to rebuild a robust customer network. Additionally, marketing-centric turnaround strategies demonstrate feasibility and productivity, particularly in the validation stage. In the healthcare sector, marked breakthroughs in science and technology underscore the relevance of technology-oriented turnaround strategies, given the imperative for startups to adapt to advanced technologies, including artificial intelligence. Similarly, finance and HR-related strategies prove more productive in the health sector, reflecting its high degree of agility and resilience in the pursuit of recovery.

CONCLUSION

In summary, the study sheds light on crucial factors steering the turnaround strategies for startups, distinguishing between internal and external elements. Fund shortages emerge as a pivotal internal challenge, underscoring the financial resilience essential for startup success. Meanwhile, the recognition of evolving customer preferences emphasizes the need for adaptability to external shifts. Industry-specific nuances surface, with edtech startups thriving on customer-centric strategies, while healthcare startups find success with product-oriented approaches. The study emphasizes the synergy of strategies, illustrating how companies integrate marketing-centric approaches alongside customer-oriented ones. Additionally, the significance of technology-oriented strategies, especially in healthcare, highlights the imperative for startups to stay technologically updated. In the financial and human resources realms, the study underscores the healthcare sector's resilience, making finance and HR-related strategies more productive in this context. Overall, the research provides practical insights for startups navigating the dynamic landscape, offering tailored recommendations for sustained growth and resilience.

Author Contributions:

Conceptualization, K.H. and A.P. IG.; methodology, K.H.; software, J.G.O.; validation, K.H., A.P. IG. and J.G.O.; formal analysis, K.H.; investigation, K.H.; resources, K.H.; data curation, A.P. IG.; writing—original draft preparation, K.H.; writing—review and editing, J.G.O.; visualization, J.G.O.; supervision, K.H.; project administration, A.P. IG.; funding acquisition, J.G.O. All authors have read and agreed to the published version of the manuscript.

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The data presented in this study are available on request from the corresponding author.
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DISTRIBUTING FINANCIAL SERVICES BY FINANCIAL AGENTS IN CORRELATION WITH LEGAL AND MANAGERIAL ASPECTS: CASE STUDY OF THE SLOVAK REPUBLIC

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ABSTRACT

Legal rules regulate various social relations, among them also performing of business on the financial market, which is connected with a certain level of risk and therefore needs to be permitted (via a license, registration or other kind of authorisation) by the state. This is also the case when performing the distribution of financial services. Here the authorization to act as financial agent is being granted by the National Bank of Slovakia via a registration or license. Legal rules are the “instruments” which determine, by means of orders, prohibitions and permissions, the way in which financial services are being distributed by financial agents. In the Slovakian legal environment, the Act No. 186/2009 Coll. On Financial Intermediation and Financial Advisory and on the Change and Amendment of Certain Act as Amended, is regulating financial intermediation and financial advisory dominantly. This normative legal act is unique, because it represents an integrated legal framework of performing distribution of financial services in the essential sectors of the financial market. The paper focuses on selected legal aspects of the regulation of financial intermediation performed by financial agents, with a particular emphasis on de lege ferenda proposals that protect clients.

Objectives: The objective of the paper is to provide de lege ferenda proposals. Methods/Approach: The analysis, synthesis, induction, deduction, abduction and the comparative method are being used. Results: Results of the research are de lege ferenda proposals. Conclusions: The regulatory framework should be improved in order to provide a higher level of protection of financial consumers.

Keywords: independent financial agent, subordinate financial agent, financial intermediation, National Bank of Slovakia, Slovak republic

JEL classification: K2, K23, K22, K33, O20

Paper type: Case study


INTRODUCTION

A legal rule is the smallest (atomic) part of the legal system (legal order) and at the same time an elementary object of knowledge of law. A legal rule is an intangible product of human thought, a part of social consciousness, and its contents are commands, prohibitions and permissions (Knapp, 1981).

A set of legal rules regulating the distribution of financial services in the Slovak Republic is represented by the Act No. 186/2009 Coll. on Financial Intermediation and Financial Advisory and on Amendments and Additions to Certain Acts, as amended (hereinafter referred to as the “Financial Intermediation Act”).
In the currently valid legislation, we find both positive and negative definitions of the term financial intermediation. With the negative definition, the legislator creates a range of activities that do not constitute financial intermediation, meaning they are not covered by the Act on Financial Intermediation. This includes in particular expert opinions which lack an individual element, i.e. they are provided for an indeterminate number of recipients, as well as the activities of financial institutions and their employees, and also outputs in which data relating to the financial market are processed, but which are used for purposes other than financial intermediation, e.g. in the context of the provision of advocacy services.

The concept of financial intermediation is not limited to the conclusion of a contract for the provision of a financial service. On the contrary, the legal definition reflects the fact that the relationship between the financial agent and the client is one of trust and confidence and therefore the scope of this legal institute includes activities such as, various consultations relating to the financial service contract and its administration, modification or termination, cooperation in the handling of claims and performance of the client under the financial service contract.

The currently valid regulation carries the idea that a financial agent's care for its client does not end with the establishment of a contractual relationship, the legislator educates to responsibility and to cooperation at the key moment of the emergence of a claim for performance arising from the contractual relationship, which clearly shows the legislator's efforts to implement the concepts of client protection in the financial market (Sidak et al., 2020).

Therefore, the legal definition of financial intermediation includes activities that provide services to the client even after the conclusion of a contract for the provision of a financial service.

Financial intermediation is a business under Act No. 513/1991 Coll., the Commercial Code, as amended (hereinafter referred to as the “Commercial Code”).

According to the Financial Intermediation Act, financial intermediation can be performed by a tied financial agent, a tied investment agent, ancillary insurance intermediary, a subordinate financial agent and an independent financial agent. It is being focused on the independent and subordinate financial agent.

Despite the fact that financial agents perform financial intermediation, there are three key differences in the legal regulation of financial intermediation carried out in the category of independent and subordinate financial agent.

The first difference represents the access to the business. While for the independent financial agent, the legislator imposes the obligation to have the relevant authorisation, for a subordinate financial agent the necessity to register in the register of financial agents, financial advisors, financial intermediaries from another Member State in the insurance or reinsurance sector and financial intermediaries from another Member State in the field of housing credit (hereinafter referred to as the “register”) arises (Chernov et al., 2019).

The second area reflects the different legal status in the performance of financial market supervision. The independent financial agent is a supervised financial market entity, the legislator includes it in the enumerative list of supervised financial market entities enshrined in Article 1 of the Act No. 747/2004 Coll. on Financial
Market Supervision and on Amendments and Additions to Certain Acts, as amended (hereinafter referred to as the “Financial Market Supervision Act”). The subordinate financial agent is not a supervised financial market entity. This entrepreneur is not supervised by the National Bank of Slovakia, meaning not under the direct supervision of the supervisory body. However, the legislator has through a set of legal rules incorporated in the Financial Intermediation Act, the so-called delegated supervision (Shakespeare 2020). This is a supervision exercised by the independent financial agent over the subordinate financial agent. At the same time, the National Bank of Slovakia supervises the independent financial agent in the fulfilment of this obligation. Therefore, we can speak of delegated, devolved supervision (Kuril et al., 2024).

The third aspect relates to the possibility of carrying out financial intermediation through subordinated entities. The independent financial agent is entitled to carry out the distribution of financial services through subordinate financial agents under the conditions defined in the Financial Intermediation Act. The subordinate financial agent is not entitled to carry out financial intermediation through subordinated entities (Khan et al., 2022).

METHODOLOGY

The paper is developed using analysis, synthesis, deduction, induction and abduction. Analysis is a decomposition method based on a thought process in which the whole is decomposed into its parts (Ochrana, 2009). The goal is to explain a given problem by examining its components in detail (Ochrana, 2009). We decompose the whole, represented by the regulation of the conduct of financial intermediation by a subordinate financial agent, into its individual parts. In particular, the individual components represent the conduct of financial intermediation by a subordinate financial agent and the legal relationship between the subordinate financial agent and the independent financial agent (Yermachenko et al., 2023).

Synthesis is the assembling of the individual parts into a whole, or the creation of new concepts by assembling previously isolated elements (Knapp & Gerloch, 2001). Deduction is based on syllogism, in which a conclusion is drawn from two original premises (Ochrana, 2009). The deductive method uses deductive reasoning to know the truth. Deduction is a thought process by which we deduce a new proposition from the mixtures of certain rules used, proceeding from the general to the particular (Ochrana, 2009) and will be used from the general arrangement of delegated supervision to the specific manner of its implementation. By induction, we derive general regularities and laws based on the analysis of individual data (Ochrana, 2009). However, unlike deductive inferences, inductive inferences are valid only with a certain degree of probability (Ochrana, 2009).

Abduction is the thought process by which we look for connections between seemingly unrelated facts; therefore, abduction results in the statement that appears most likely based on the available data (Ochrana, 2009).

The key objective of the paper is to introduce de lege ferenda proposals that lead to transparent information on the authorization of an independent financial agent to carry out financial intermediation through subordinate
financial agents and that act as a preventive measure against the phenomenon of “migration” of the network of subordinate financial agents. Following the defined objectives, these hypotheses are being set:

H1: The legal regulation of transparent information of the client about the authorization of an independent financial agent to carry out financial intermediation through subordinate financial agents is not at a sufficient level.

H2: The legal framework for financial consumer protection in financial intermediation carried out by a subordinated financial agent is not at a sufficient level.

RESULTS

Proceedings in Supervisory Matters and Disclosure of Information on the Authorisation to Dispose of Subordinate Financial Agents

The content of the fundamental right to conduct business is being defined as a case-by-case right, with the particular significance of a case-by-case approach (Drgonec, 2019).

The Constitutional Court of the Slovak Republic first ruled that the right to conduct business is guaranteed only to natural persons under the Constitution of the Slovak Republic, and then it granted the right to conduct business to legal persons (PL ÚS 37/1999. Ruling of 25 May 1999, ZNUÚS 1999, p. 76-94), and this decision has been repeated several times (Drgonec, 2019).

The first prerequisite for exercising the right to conduct business is the freedom to enter into entrepreneurial activity. “Market entry” cannot be equated with absolutely unrestricted access to a chosen business activity, purely on a discretionary basis, without any conditions whatsoever (Drgonec, 2019). According to Article 35 Paragraph (2) of the Constitution of the Slovak Republic, the conditions for the exercise of professions and activities by which the right to conduct business is exercised, may be established by an act (Drgonec, 2019).

Such a normative legal act is represented by the Financial Intermediation Act, which regulates financial intermediation, financial advisory, maintenance of the register, supervision of financial intermediation and supervision of financial advisory, as well as certain relations related to the provision of financial services by a financial institution.

This is one of the key pieces of legislation for the business of the independent financial agent and the subordinate financial agent.

A fundamental feature of access to performing business on the financial market is the necessity to have the relevant authorisation or registration. Among the categories of financial agents, only the independent financial agent will be required to obtain a licence. Stricter broker licensing leads to an increase in default rates (Shi et al., 2018).

A natural or legal person intending to engage financial intermediation as an independent financial agent will be required to demonstrate preparedness for this activity. This will be done in proceedings in supervisory matters. Proceedings in supervisory matters represent sui generis administrative proceedings, contributing to the fulfilment of the function of the National Bank of Slovakia as a supervisory authority, to the fulfilment of
the obligations arising for supervised entities of the financial market and other persons from special legal regulations.

Among essential features of the proceedings in supervisory matters, the following can be included:

- Deciding on the rights and obligations of supervised financial market entities or other persons as provided by specific regulations, in this case deciding on the rights and obligations of the applicant for authorisation to act as an independent financial agent;

- The parties to the proceedings have procedural rights and, in order to ensure the conduct and purpose of the proceedings and have procedural obligations;

- In the proceedings, the National Bank of Slovakia is the holder of rights, which the National Bank of Slovakia is entitled to exercise in order to ensure the fulfilment of tasks arising from specific legislation, in this case the Financial Intermediation Act;

- The proceedings take place in the forms provided for by financial law rules;

- The outcome of the proceedings is an individual administrative act, which may take the form of a procedural decision or an authorisation decision or a sanctioning decision.

It can be abstracted from the current legislation that proceedings in supervisory matters comprise two categories of proceedings. Proceedings initiated by on the basis of a party's request are referred to as licensing proceedings (Slezáková et al., 2018). This designation can be accepted from a practical point of view, as it covers the vast majority of proceedings initiated at the initiative of a party, but from a theoretical and legal point of view it should be noted that there are also a few exceptions (e.g. proceedings in which the National Bank of Slovakia determines the insurer that is obliged to conclude an insurance contract with the policyholder pursuant) (Slezáková et al., 2018). Proceedings initiated on the National Bank of Slovakia's own initiative are usually referred to as sanction proceedings, but this designation should also not be taken absolutely (Slezáková et al., 2018).

Proceedings in supervisory matters in which the National Bank of Slovakia decides exclusively on the basis of an application for authorisation to act as an independent financial agent, shall be one of the licensing proceedings.

It follows that there are two subcategories of licensing procedures. Those whose purpose is to enable the supervised financial market entity to perform a legal act, based on the approval or prior approval of the National Bank of Slovakia, and those whose purpose is to start a business on the financial market. The legislator does not define in the current legislation the set of legal acts which an independent financial agent will be entitled to perform exclusively on the basis of the approval or prior approval of the National Bank of Slovakia. The Financial Intermediation Act provides the conduct of proceedings for the purpose of granting the relevant authorisation. In this context, we note that we are referring to licensing proceedings conducted for the purpose of access to business on the financial market.

The licensing procedure, completed by the decision of the National Bank of Slovakia granting the authorisation to carry out the activity of an independent financial agent, shall primarily have:
- a regulatory function - it admits to business, to financial intermediation, only entities fulfilling the legal conditions, i.e. if the submitted application and its annexes show that the conditions for business on the financial market are met, the supervisory authority grants the relevant authorisation, thus ensuring that the activity is carried out exclusively by prepared entities;

- a protective function - if the application and its annexes show that the legal conditions for performing business on the financial market are not met, the supervisory authority will not grant the license, thereby protecting the market from unprepared operators.

The licensing procedure is governed by a set of legal rules regulating a specific field of activity of the National Bank of Slovakia. The procedures in question are characterised by a set of principles as a set of objectives, ideas determining the direction of legal regulation, defining the characteristics and content of the rules of regulation.

The following principles of the licensing procedure can be derived from the financial law rules contained in the Financial Intermediation Act and the Financial Market Supervision Act:

- The principle of imperativeness - which implies that the National Bank of Slovakia, as a supervisory authority, by its individual administrative acts issued on the basis of and within the limits of the Financial Intermediation Act and the Financial Market Supervision Act exercises public administration and determines unilaterally binding rules for the independent financial agent;

- The principle of subordination - it is related to the principle of imperativeness, which implies that the applicant is in a subordinate position in the authorisation procedure in relation to the National Bank of Slovakia;

- The principle of protection of the public interest - the licensing procedure constitutes a means of enforcing the public interest in the functionality of the financial intermediation service provided by an independent financial agent.

The statutory conditions which a legal person must prove to be in accordance with Article 18 of the Financial Intermediation Act (we disregard the conditions specified for natural persons) are as follows:

- The credibility of the statutory body or members of the statutory body, members of the supervisory body and the professional guarantor of the future independent financial agent;

- The professional competence of the statutory body or at least one member of the statutory body who will be responsible for carrying out the financial intermediation and of the professional guarantor of the future independent financial agent;

- The credibility of the professional competence of the staff carrying out the activity the content of which is financial intermediation;

- The qualifying holding, which includes the persons exercising control over the future independent financial agent, and the qualified participation of the persons in the future independent financial agent do not prevent the effective exercise of supervision by the National Bank of Slovakia;

- Technical and organisational preparedness;
- The applicant has not been convicted of a criminal offence.

Compared to other supervised financial market entities (e.g. payment institutions or investment firms), the independent financial agent is not subject to on-site verification of its readiness to carry out financial intermediation. The readiness to carry out the activity in question is demonstrated by the applicant by means of a set of internal directives containing a description of how the activity is to be carried out.

In accordance with the Decree of the National Bank of Slovakia No 1/2018 of 6 February 2018 on the manner of proving compliance with the conditions for granting an authorisation to act as an independent financial agent and for granting an authorisation to act as a financial advisor, as amended by the Decree of the National Bank of Slovakia No 4/2019 of 1 October 2019 amending the Decree of the National Bank of Slovakia No 1/2018 on the manner of proving compliance with the conditions for granting an authorisation to act as an independent financial agent and for granting an authorisation to act as a financial advisor, the applicant who applies for the relevant authorisation and intends to act through subordinate financial agents, is obliged to demonstrate, in the context of technical and organisational readiness for the implementation of financial intermediation, by means of internal directives how the relationship of the statutory body, or the relationship of the members of the statutory body, the professional guarantor, the applicant's employees, if any, with the subordinate financial agents will be regulated (Sidak, Slezáková, Hajnišová & Filip, 2023).

Secondary legislation also requires that the applicant demonstrate in a further internal directive how it will ensure compliance with its statutory obligations under Article 29 of the Financial Intermediation Act, i.e. how it will implement delegated supervision.

The range of internal directives submitted is also completed by a draft written contract to be concluded by the independent and subordinate financial agent pursuant to Article 9 of the Financial Intermediation Act. If a party to the proceedings has demonstrated its technical and organisational readiness to carry out financial intermediation through subordinated entities, the National Bank of Slovakia shall assign the entity a login name and password serving for the fulfilment of information obligations, as well as for the electronic submission of proposals for registration (its change or cancellation) of subordinate financial agents.

In accordance with the principle of free assessment of evidence, the National Bank of Slovakia compares the assumptions made by the applicant for the granting of the relevant authorisation with the requirements imposed on the performance of the activity of an independent financial agent. That assessment shall then be reflected in the supervisory decision granting the authorisation to carry out the activity of an independent financial agent or rejecting the application.

As stated above, the substantive decision issued in the proceedings in supervisory matters constitutes an individual administrative act. The Financial Market Supervision Act defines its content and formal requirements. The substantive elements are the operative part, the statement of reasons and the notice of appeal. The content and formal requirements of the National Bank's decision are set out in an exhaustive list in the Financial Market Supervision Act.
The supervisory authority does not indicate in the operative part of the individual administrative act whether the participant will be authorised to carry out financial intermediation through subordinate financial agents. This means that if the operative part of the final decision of the National Bank of Slovakia granting the authorisation to act as an independent financial agent is published, the public will not acquire knowledge of the authorisation to distribute financial services through subordinated entities. At the same time, we would like to draw attention to the fact that, on the basis of the non-legally binding model application for the authorisation to act as an independent financial agent published on the website of the National Bank of Slovakia, the applicant, whether a legal entity or a natural person, is obliged to state whether it is interested in carrying out activities through subordinate financial agents. The supervisory authority must therefore undoubtedly comment on this fact in its statement of reasons. However, as stated above, the information in question is not made visible in the operative part of the decision of the National Bank of Slovakia (Sidak, Slezáková & Filip, 2023).

In practice, the possibility of verifying the authorisation of a specific independent financial agent to carry out financial intermediation through subordinate financial agents remains an option for both the professional and the general public, through the register. By entering the business name or the name and surname of the subordinate financial agent, the registry will find out who is the applicant for registration. Similarly, the information obligations under Article 33 of the Financial Intermediation Act, in which the subordinate makes information about its promoter available to the client, are not consistently fulfilled in some cases.

Following the mentioned above, there are two tables being provided, from which results the current numbers of particulars categories of financial agents carrying out activities in Slovakia (Table 1 and Table 2).

**Table 1. Number of Financial Agents in Slovakia – Key Categories**

<table>
<thead>
<tr>
<th>Category of Financial Agent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Independent Financial Agents</td>
<td>402</td>
</tr>
<tr>
<td>2. Subordinate Financial Agents</td>
<td>16,888</td>
</tr>
<tr>
<td>3. Tied Financial Agents</td>
<td>6,738</td>
</tr>
</tbody>
</table>

*Note: Website of the National bank of Slovakia retrieved April 9, 2024.*

**Table 2. Number of Financial Agents in Slovakia – Non-Key Categories**

<table>
<thead>
<tr>
<th>Category of Financial Agent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Brokers of Supplementary Insurance</td>
<td>5</td>
</tr>
<tr>
<td>2. Tied Investment Agents</td>
<td>451</td>
</tr>
<tr>
<td>3. Financial Intermediaries from Another Member State</td>
<td>3,739</td>
</tr>
</tbody>
</table>

*Note: Website of the National bank of Slovakia retrieved April 9, 2024.*
Contractual Penalty – Protection against Migration of Subordinate Financial Agents

An applicant for an authorisation to act as an independent financial agent shall, inter alia, demonstrate its readiness to perform financial intermediation through subordinate financial agents by drafting a written contract which the independent financial agent concludes with the subordinated entity in accordance with Article 9 of the Financial Intermediation Act. In this regard, we consider that the National Bank of Slovakia is entitled to comment in proceedings in supervisory matters on the draft contract between two entrepreneurs only to the extent that it is necessary to ascertain whether the entity is properly ensuring the implementation of the delegated supervision. Other elements are not assessed and, in our opinion, cannot be assessed by the National Bank of Slovakia, as this is a private law relationship between two entrepreneurs. From the point of view of legal theory, a contract is considered to be a legal fact consisting of two or more unilateral legal acts in which there is a clash between them, with the conclusion of the contract occurring at the moment when the proposal for the conclusion of the contract and the acceptance of the proposal for the conclusion of the contract meet (Krajčo, 2015).

Contract rarely occurs as an abstract concept, but is mostly applied in the context of a standard contract type, a kind of abstract model of a contractual relationship (Bejček et al., 2015).

By types of contracts we mean named models of contractual relationships governed by certain individualised rules (such as a contract of sale, a contract for work, a contract of agency) (Bejček et al., 2015).

For named contracts, the parties may agree differently, only within the framework of the dispositive provisions intended for the specific contract type (Marek, 2008).

As mentioned above, a subordinated financial agent is an entrepreneur under Article 2(2)(c) of the Commercial Code. This entity constitutes the distribution channel of an independent financial agent with which it is obliged to conclude a written contract in accordance with Article 9 of the Financial Intermediation Act.

An independent financial agent and a subordinate financial agent may conclude a nominee contract provided for in the Commercial Code, namely a commercial agency contract, for the purpose of regulating their mutual relations.

A commercial agency agreement concluded pursuant to Article 652 et seq. of the Commercial Code creates the prerequisites for the organisation of a distribution network build by independent entrepreneurs.

The essential parts of a commercial agency contract are the identification of the parties to the contract (the parties to the contract are the commercial agent - the subordinate financial agent and the represented - the independent financial agent), the obligation of the subordinate financial agent to undertake activities aimed at concluding certain types of contracts (contracts for the provision of financial services), the obligation of the independent financial agent to pay the subordinate financial agent a remuneration (commission). We are of the opinion, however, that the independent financial agent will not ordinarily enter into the named contract in question because of mandatory commercial law rules are granting to a commercial agent (subordinate financial agent) the right to a severance payment.
Article 269 Paragraph 2 of the Commercial Code provides the possibility of concluding an innominate (unnamed) contract, since the specific factual situation does not belong to the contractual types regulated by the Commercial Code.

For the needs of practice in the field of distribution of financial services, an innominate contract concluded pursuant to Article 269 Paragraph 2 of the Commercial Code in conjunction with Article 9 of the Financial Intermediation Act appears to be optimal. For a valid conclusion of an unnamed contract, the subject matter of the commitment must be sufficiently specified.

The subject matter will consist of the performance of financial intermediation by a subordinate financial agent so that the client has the opportunity to enter into a financial service contract with a financial institution (a contractual partner of the independent financial agent). At the same time, the independent financial agent, as the proposer, i.e. as a superior entity performing delegated supervision, has an incentive to incorporate the security device into the contract in question. The basic legal regulation of security institutes in the Slovak Republic is found in the Act No 40/1964 Coll. Civil Code as amended and for the area of commercial obligation relations it is supplemented or modified by the regulation contained in the Commercial Code. By its nature, a contractual penalty is a pecuniary sanction for the breach of a contractual obligation (Dohnal et al., 2016). However, it is also possible to be sanctioned for a breach of a legal obligation (Dohnal et al., 2016). In order to be applicable, it must be contractually determined (Dohnal et al., 2016). One of the functions of a contractual penalty is to strengthen the position of the creditor in other ways (Horák, 2015). We define a contractual penalty as a contractually specified consideration for a breach of a secured obligation, which the party who breaches the secured obligation (the subordinate financial agent) is obliged to provide to the beneficiary (the independent financial agent) (Ovečková, 2011).

The contractual penalty in the innominate contract shall be agreed between the independent and the subordinate financial agent, primarily to ensure the fulfilment of the obligations relating to the exercise of delegated supervision.

In this context, we also point to another dimension of the possibility of incorporating this security institute in the innominate contract concluded between the independent and the subordinate financial agent. To the group of clients of the independent financial agent that carries out financial intermediation through subordinated entities belong also the clients of the subordinated financial agents. In practice, a relatively common phenomenon is the termination of a contract by a subordinate financial agent and the conclusion of a new written contract pursuant to Section 9 of the Financial Intermediation Act with another independent financial agent. In these cases, clients, especially non-professional clients, are also exposed to the risk that they will be repeatedly approached by a subordinate financial agent with offers to conclude another financial service contract. A pertinent question that arises in this context is whether the offer in question actually corresponds to their needs or the needs of the members of their household. They may already be satisfied by a financial service that was provided to them by a subordinate financial agent in the past with a previous contractual partner.
It therefore seems legitimate for the independent financial agent and the subordinate financial agent to agree on a contractual penalty in the event that the subordinate financial agent terminates the contract within a certain period of time from its conclusion, e.g. two years from the date of its conclusion. It follows that the contractual penalty can serve as a hedging device to prevent the termination of the contract by the subordinate financial agent and the conclusion of a new contract with another independent financial agent. It also serves to protect non-professional clients, as it is a well-established market practice that subordinate financial agents tend to conduct financial intermediation with a new independent financial agent in the environment of the group of clients built up with the previous proposer.

We also take the view that by extending information obligations and, in particular, by transparently informing the client that the subordinated financial agent has started to carry out financial intermediation for another independent financial agent, the protection of the retail client is enhanced (Sidak, Slezáková, Hajnišová & Filip, 2023).

Certain Aspects of Regulation of Distribution of Financial Services in the Czech Republic and Slovakia

The Act No. 427/2011 Coll. Act on Supplementary Pension Savings as amended (hereinafter only “Act on Supplementary Pension Savings”) distinguishes between an independent intermediary and a tied agent, which represent natural persons or legal entities engaged in business.

Independent intermediary

The independent intermediary carries out the intermediation of supplementary pension savings on the basis of an authorisation for the activity of an independent intermediary granted by the Czech National Bank. The legislator lays down the following conditions for the applicant for the authorisation to act as an independent intermediary:

- the applicant's registered office or a branch of the applicant is located in the territory of the Czech Republic,
- the credibility of the applicant, if the applicant is a legal person, the credibility shall be demonstrated by a member of the statutory body or another person with similar powers; the condition of credibility must also be fulfilled by the controlling person of the applicant, which is a legal person,
- professional competence, where the applicant is a legal person, professional competence shall be demonstrated by a member of the statutory body or other person with equivalent powers, provided that those persons actually manage or are to be responsible for the distribution of supplementary pension savings,
- the applicant is insured against the obligation to compensate the participant or prospective participant of supplementary pension savings for damage caused by a breach of one of his/her obligations set out in the Supplementary Pension Savings Act or other legal regulations to the extent to which they apply to the mediation of supplementary pension savings, with a limit of indemnity of at least CZK 13,500,000 per one insured event and at least CZK 2,025,000,000 in the event of the concurrence of several insured events in one year,
- the data on the applicant's person provided in the application enable the applicant to be identified in the relevant basic register,

- the applicant is not an independent intermediary or a tied agent under the Supplementary Pension Savings Act.

**Tied agent**

A tied agent is an entity authorised to arrange supplementary pension savings on the basis of registration in the register of persons authorised to mediate supplementary pension savings. This means that the registration principle is applied to the category in question. The principle in question reflects the fact that the Czech National Bank does not carry out a substantive examination (Hudáková, M., Urbancová, H., Vnoučková, L., 2019).

The Supplementary Pension Savings Act established a register of persons authorised to arrange supplementary pension savings, which is kept by the Czech National Bank exclusively in electronic form and in which individual intermediaries and, as mentioned above, tied agents are entered.

According to Article 22 Paragraph 1 of the Act No. 650/2004 Coll. on Act on Supplementary Pension Savings and on the Amendment and Supplementation of certain acts as amended a supplementary pension asset management company is a joint-stock company with its registered office in the territory of the Slovak Republic, the subject of activity of which is the creation and administration of supplementary pension funds for the purpose of carrying out supplementary pension savings, on the basis of a permit for the establishment and operation of a supplementary pension asset management company granted by the National Bank of Slovakia. A supplementary pension asset management company is allowed, when distributing its financial products, to use tied financial agents and independent financial agents. Independent financial agents may cooperate with subordinate financial agents.

**Certain Aspects of Regulation of Distribution of Financial Services in Austria**

According to Article 1 Paragraph 1 of the “Bundesgesetz vom 17. Mai 1990 über die Errichtung, Verwaltung und Beaufsichtigung von Pensionskassen (Pensionskassengesetz – PKG)” (hereinafter “Pension Management Companies Act”) a pension management company is an enterprise authorized under this Federal Act to conduct pension fund business.

According to Article 1 Paragraph 2 of the Pension Management Companies Act business of the pension management company shall consist of the legally binding promise of pension management company to beneficiaries and the provision of pensions to beneficiaries and surviving dependents, as well as the related collection and investment of pension fund contributions. Each pension management company shall grant commitments for old-age and survivors’ pensions; in addition, commitments for disability pensions may be granted. Old-age pensions shall be paid for life, disability pensions for the duration of disability and survivors’ pensions in accordance with the pension fund contract. Pensions to be paid out by a pension fund may only be settled if

1. the cash value of the amount paid out does not exceed EUR 9,300 when the insured event occurs, or
2. A person who is entitled to a survivor's pension within the meaning of this Federal Act has remarried. The amount limit under no. 1 shall not apply in this case.

For the Austrian regulatory environment, regulating the distribution of financial services the “Gewerbeordnung 1994 - GewO 1994, BGBI. Nr. 194/1994” (hereinafter “Austrian Trade Licensing Act”) plays an important role in the area of the distribution of financial services. One of the categories of brokers regulated by the Austrian Trade Licensing Act is represented by a commercial insurance intermediary. A commercial insurance intermediary is in accordance with Article 137 Paragraph 2 of the Trade Licensing Act a commercial insurance intermediary is any natural person, legal entity or registered partnership that engages in or performs the activity of insurance intermediation for remuneration. The activity of insurance mediation within the scope of a trade license under Article 94 Z 75 or Z 76, as a secondary trade or as a secondary activity (para. 3) may be exercised either in the form of "insurance agent" or in the form of "insurance broker and consultant in insurance matters", depending on the actual relationship with insurance undertakings. According to Article 137 Paragraph 1 of the Trade Licensing Act Insurance mediation are

1. advising, proposing or carrying out other preparatory work for the conclusion of insurance contracts,

2. concluding insurance contracts or assisting in their administration and performance, especially in the event of a claim,

3. providing information about one or more insurance contracts based on criteria chosen by a customer through a website or other media, as well as ranking insurance products, including price and product comparison, or offering a discount on the price of an insurance contract, if the customer can conclude an insurance contract directly or indirectly through a website or other medium, or

4. the activities referred to in items 1 to 3 with respect to reinsurance contracts.

An important question that rises in this context is whether a commercial insurance intermediary may mediate pension fund contract or a contract of accession to an occupational pension fund. According to a statement of the professional association of insurance agents¹: The IDD regulates insurance distribution, linking it to the term "insurance contract", without defining this kind of contract in a detailed way. Retirement products that "are recognized under national law as products whose primary purpose is to provide the investor with an income in retirement and which provide the investor with an income in retirement. and which grant the investor an entitlement to certain benefits" are, according to Art 1 Nr. 17 Letter c of the IDD, at least, not covered by the term insurance investment product. Neither pension funds nor occupational pension funds are likely to meet the definition under Art. 1 Par. 1Nr. 17 Letter c of the IDD insurance undertakings, neither pension funds nor occupational pension funds are likely to meet the definition under Art. 1(1)(6) IDD (in conjunction with Art. 13(1) and 14 of Directive 2009/138/EC, Solvency II). It can be assumed that neither a pension fund contract nor a contract of accession to an occupational pension fund constitutes an insurance contract within the meaning of the IDD.

Commercial insurance intermediaries often have a long-term communication with their clients providing them consultations. In practice, a situation may arise, in which corporate customers ask for advice concerning retirement provision options for their company and employees and to assist them in concluding such contracts and for support in concluding such contracts.

A pension fund contract or a contract of accession to an occupational pension fund are not considered insurance contracts in the sense of the IDD. The mediation of such contracts is therefore not covered by the direct scope of authorization of Commercial insurance intermediaries.

When focusing on this question not only Article 137 and the following of the Austrian Trade Licensing Act should be taken into consideration. The brokerage of pension and retirement fund contracts (including possible and disability insurance) by commercial insurance intermediaries may be regarded as a service which complements an economically reasonable supplementing service according to Article 32 Paragraph 1a of the Trade Licensing Act.

Therefore, the mediation of pension fund contract or a contract of accession to an occupational pension fund by commercial insurance intermediaries is possible through the use of other right under Article 32 Paragraph 1a of the Trade Licensing Act. According to which traders shall also be entitled to provide services of other traders if such services are economically complementary to their own services. Complementary services may not exceed in total 30% of the trader's total turnover in a business year. Within this limit, supplementary services of regulated trades may also be provided, provided that they are awarded pending acceptance by the principal in the case of target engagements or pending the termination of the supplementary own services in the case of continuing engagements, and that they represent at the same time no more than 15% of the total volume of services.

**Certain Aspects of Regulation of Distribution of Financial Services in Germany**

According to Article 232 of the „Versicherungsaufsichtsgesetz vom 1. April 2015 (BGBl. I S. 434), das zuletzt durch Artikel 9 des Gesetzes vom 31. Mai 2023 (BGBl. 2023 I Nr. 140) (hereinafter “Insurance Supervision Act”) a pension management company is a legally independent life insurance company whose purpose is to provide cover for lost income from employment due to old age, disability or death and which 1. conducts its insurance business on a funded basis,

2. provides benefits, in principle, only from the time when the income from gainful employment ceases to exist; if the income from gainful employment ceases to exist in part, the general terms and conditions of insurance may provide for pro rata benefits,

3. may provide benefits in the event of death only to surviving dependents, whereby a death benefit limited to the amount of ordinary funeral expenses may be agreed for third parties, and

4. grants the insured person his or her own claim to benefits against the pension fund or provides benefits as a reinsurance policy.

For the German legal environment regulating the distribution of financial services the „Gewerbeordnung in der Fassung der Bekanntmachung vom 22. Februar 1999 (BGBl. I S. 202), die zuletzt durch Artikel 6 des
Gesetzes vom 31. Mai 2023 (BGBl. 2023 I Nr. 140) geändert worden ist” (hereinafter “German Trade Licensing Act”) is of importance.

In connection with the regulation mentioned above, especially, Article 34d of the German Trade Licensing Act is of relevance as it regulates the category of the insurance intermediary and insurance broker. These entities are allowed to distribute financial services provided by the pension management company. An insurance intermediary is a person who

1. is entrusted as an insurance agent of one or more insurance companies or of an insurance agent with the task of brokering or concluding insurance contracts, or
2. as an insurance broker, undertakes the brokerage or conclusion of insurance contracts for the principal without being entrusted with this by an insurance company or an insurance agent.

An insurance broker is a person who gives the impression to the policyholder that he is providing his services as an insurance broker. The activity as an insurance broker also includes

1. the involvement in the management and performance of insurance contracts, especially in the event of a claim,
2. if the policyholder can conclude an insurance contract directly or indirectly via the website or the other medium,
   a) providing information on one or more insurance contracts based on criteria chosen by a policyholder through a website or other medium, and
   b) providing a ranked list of insurance products, including a price and product comparison or discount on the price of an insurance contract.

Anyone wishing to broker the conclusion of insurance or reinsurance contracts on a professional basis (insurance intermediary) requires a license from the competent chamber of industry and commerce. The license pursuant to sentence 1 shall state whether it is granted to an insurance intermediary or an insurance broker. An insurance intermediary is prohibited from granting or promising special remuneration to policyholders, insured persons or beneficiaries under an insurance contract. The license granted to an insurance broker shall include the authority to provide legal advice to third parties who are not consumers on the agreement, amendment or review of insurance contracts for a separate fee; this authority to provide advice shall also extend to employees of companies in cases where the insurance broker advises the company.

Also of importance is Article 34d Paragraph 2 of the German Trade Licensing Act that is regulating the insurance advisor. Any person who wishes to provide professional advice on insurance or reinsurance (insurance consultant) shall require a license from the competent Chamber of Industry and Commerce. An insurance advisor is anyone who, without receiving an economic advantage from an insurance company or being dependent on it in any other way

1. also provides legal advice to the client on the agreement, amendment or review of insurance contracts or on the assertion of claims arising from insurance contracts in the event of an insured event,
2. represents the client out of court vis-à-vis the insurance company, or
The insurance advisor may only be remunerated for his work by the client. The insurance consultant may not accept payments from an insurance company in connection with the consultation, in particular based on a referral because of the consultation. If several insurance policies are equally suitable for the policyholder, the insurance advisor shall offer the policyholder primarily the insurance policy that is available without the offer of a benefit from the insurance company. If the insurance advisor provides the policyholder with an insurance policy whose contract includes benefits in favor of the person providing the insurance, the insurance advisor shall immediately arrange for the insurance company to pay the benefits to the policyholder in accordance with Article 48c Paragraph 1 of the Insurance Supervision Act.

DISCUSSION

The choice of a distribution channel can significantly affect the profitability of a financial institution, e.g. insurance company (Klumpes, P., J., M., 2004) and a basic function of financial brokers can be described as their acting as information distributors (Chuang, H., 2016). The Financial Intermediation Act distinguishes between financial advisory and financial intermediation.

Financial advisory is a business, in which only the client can provide the remuneration and it is based on an independent analysis of a sufficient number of financial services. According to Hermansson, C. et al., financial advisory meetings show positive effects on saving behavior (Hermansson, C. et al., 2016). According to Mullainathan, S. et al. financial advisors fail to to override client biases toward return chasing (Mullainathan et al., 2012). Especially, financial consumers rely on financial advisors to guide their investment decisions (Linnainmamm et al., 2021). The financial advisor’s choice to hold similar portfolios may engender trust and increase client risk-taking (Gennaioli et al., 2015). Trust between financial advisors and a client is driven by a norm to trust and anticipated reciprocation (Cruciani et al., 2021). The results suggest that people use paid advice significantly more than free advice (Gino, 2008). More experienced advisors and those with wealthier clients recommend higher risk portfolios (Baekström et al., 2021). According to W. Beggs advisers providing their services to institutional clients realize statistically and economically superior risk-adjusted mutual fund performance relative to advisers oriented on non-professional (retail) clients (Beggs, 2012).

Financial intermediation represents a business, in which the remuneration is provided by a financial institution or another broker and cannot be provided by a financial consumer. The remuneration for financial intermediation is included in the price of the financial service. However, financial agents provide only an analysis of products of entities with which they cooperate.

Independent brokers have higher costs than direct brokers (Berger et al., 1997). According to Chen, M., S. et al. suggest that a multiple distribution channel strategy performs worse than a single distribution channel strategy in terms of profitability (Chen et al., 2010).
A key function of all categories of financial agents is the balancing of information asymmetries, as well as advising on the legal consequences of entering into a financial service contract. Information asymmetries can be characterised as a type of information that is unknown to clients (Stephens et al., 2017).

The likelihood to participate (e.g. in equity markets) and buy financial products rises with the degree of financial literacy (Christelis et al., 2010, Liao et al., 2017, Van Rooij et al., 2011). Studies concerning learning about financial matters had been published by Hastings, J. S. et al. (Hastings et al., 2013). Also studies pointing out that media are increasing financial literacy and the likelihood of owning stocks and the portfolio share invested in stocks (Hermansson et al., 2022). Economically vulnerable groups are placed at further disadvantage by their lack of financial knowledge (Stolper et al., 2017). Lack of financial literacy leads unsophisticated consumers to brokerage firms specializing in misconduct (Egan, M. et al., 2019). Financial literacy also reduces cost barriers (Jappelli & Padula, 2013).

According to the reports on the activities of the Financial Market Supervision Unit of the National Bank of Slovakia concerning the protection of financial consumers, clients of financial agents repeatedly, complain about inaccurate information, misleading information, highlighting the advantages of a financial service contract and withholding essential information about its content and the legal consequences of its conclusion. This is why the legal regulation of the distribution of financial services is topical and of particular importance. The primary task of the science of financial law is to put forward de lege ferenda proposals that enhance the protection of clients, especially retail clients.

In particular, recently an increasing interaction between subordinated financial agents and retail clients, i.e. persons seeking financial intermediation for their personal use or for the use of members of their household, can be observed. The demand for the distribution of financial services dominates in particular by the insurance or reinsurance sector and lending, home loans and consumer credit sectors. In our opinion, the main reason for this is that retail clients do not have sufficient information relating to the financial products.

**CONCLUSION**

Recently, especially due to the impact of the pandemic crisis, we have seen a decrease in the number of independent financial agents and an increase in the number of subordinate financial agents. This phenomenon is mainly linked to the fact that entrepreneurs are trying to optimise the costs of the business in question by changing the category of financial agent in which they carry out financial intermediation. Compared to independent financial agents, subordinated financial agents are not obliged to pay the fees of the supervised financial market entities. Similarly, the cost of liability insurance for financial intermediation is not borne by subordinated financial agents, if they contractually agree that it will be borne by their proposer (independent financial agent).

In proceedings in supervisory matters, the applicant for authorisation to act as an independent financial agent shall indicate whether it intends to carry out financial intermediation through subordinated financial agents. This information shall affect the particulars and annexes of the application for the relevant
authorisation. In the licensing procedure, the supervisory authority shall examine whether the applicant has demonstrated its readiness for financial intermediation by subordinated entities. By analysing the applicable legislation, we have concluded that the operative part of the decision of the National Bank of Slovakia granting the authorisation to act as an independent financial agent does not contain information on the authorisation to carry out financial intermediation through subordinated financial agents, thus confirming hypothesis number one.

**Proposal de lege ferenda No 1**

On the basis of the above, we present a de lege ferenda proposal that would make it a mandatory element of the operative part of the individual administrative act to indicate the authorisation to carry out financial intermediation through subordinated entities. We propose to incorporate into the Financial Intermediation Act Article 18a, which would read as follows

In addition to the general particulars of a decision pursuant to a special regulation, the operative part of a decision of the National Bank of Slovakia authorising the performance of the activity of an independent financial agent shall contain information on the authorisation to carry out financial intermediation through subordinate financial agents.

The operative part of final decisions of the National Bank of Slovakia shall be published on its website. Making this information available to clients would provide key information from a trusted source.

**Proposal de lege ferenda No 2**

The independent financial agents may perform financial intermediation through subordinate financial agents. In practice, we encounter cases where, in order to achieve higher profits, a subordinate financial agent terminates a written contract and then enters into a written contract with another independent financial agent. Its new contractual partner may potentially work with different financial institutions than the previous one. The subordinated financial agent may approach with an offer of financial services clients to whom it has already arranged a financial services contract in the past, when the previous independent financial agent was its proposer for registration. The question that arises in this context is whether the financial product in question corresponds to the needs of the clients, but rather to the subordinate financial agent's objective of making a profit.

It is not possible to abstract from the current legislation any range of notices which expressly refer to the obligation to inform the client of the fact that the subordinated financial agent has concluded a written contract with the new proposer, the independent financial agent. Meaning the second hypothesis has been confirmed. The legislation is not at a sufficient level. We see the information in question as a key motivating factor to make an informed decision (especially by the non-professional client, the financial consumer), so that the client is given an incentive to reflect on the legal consequences of terminating the financial service contract and concluding a new one.
At the same time, we draw attention to the necessity of incorporating Article 33a into the Financial Intermediation Act, which refers to the obligation of the subordinate financial agent to inform the client that there has been a change in the proposer.

If there is a change in the proposer for registration of a subordinated financial agent, the subordinated financial agent must, within 24 months from the date of its registration, demonstrably and in writing inform each client and potential client that there has been a change in its proposer for registration.

We consider that the regulation in question has the potential to detect in practice cases where a client is provided with a financial service solely in order for the subordinated financial agent to secure the sale of financial services from financial institutions with which its new promoter, the independent financial agent, is working.

We are also of the opinion that the independent financial agent is entitled to agree a contractual penalty in a written contract with the subordinated financial agent. The hedging device in question serves to protect the independent financial agent from the migration of its subordinated financial agent to another independent financial agent.

A key difference between the Slovak and Czech regulation of the conditions for the distribution of financial services (with focus on the sector of supplementary pension savings) lies in the procedural regulation. The Act No. 747/2004 Coll. on Financial Market Supervision and on Amendments to Certain Acts, as amended (hereinafter referred to as the "Financial Market Supervision Act"), in its third part called supervisory proceedings, regulates a special type of administrative procedural proceedings without subsidiary application of Act No. 71/1967 Coll. Administrative Procedure Code as amended (hereinafter referred to as the "Administrative Procedure Code"). Meaning, the Slovak legislator excludes the application of the Administrative Procedure Code in proceedings in which the National Bank of Slovakia decides on an application for a licence to act as an independent financial agent.

In comparison, the Czech regulation expressly provides for the application of Act No. 500/2004 Coll. Administrative Procedure Code as amended.

The application for authorisation to act as an independent financial agent shall be in paper form. In the context of the COVID-19 pandemic, the Act No 67/2020 Coll. on certain emergency measures in the financial sector in connection with the spread of the dangerous contagious human disease COVID-19 (hereinafter referred to as 'lex corona'). With the entry into force of the normative legal act in question, the legislator made it possible for applicants to submit applications to the National Bank of Slovakia for a licence to act as an independent financial agent electronically with a qualified electronic signature via the central portal of the public administration during the pandemic period. This is a right, not an obligation for the applicant. The possibility to submit an application for authorisation to act as an independent financial agent in paper form remains unchanged. For the applicant, therefore, there are currently two alternatives.

In the Czech regulatory framework, the Act on Supplementary Pension Savings implies that the application for authorisation to act as an independent intermediary can only be submitted electronically.
The legislation requires both the independent financial agent and the independent intermediary to be entered in the relevant register maintained by the supervisory authority. If the Czech National Bank grants the relevant license, it does not issue a written decision. In this case, the supervisory authority shall directly enter the independent intermediary in the register of persons authorised to mediate supplementary pension savings. The decision (relevant license) of the Czech National Bank shall enter into force when the independent intermediary is entered in the register of persons authorised to mediate supplementary pension savings, and the Czech National Bank shall inform the intermediary of the entry in the register.

A key difference between the Austrian, German and Slovak regulation lies in the fact, that the Austrian and German Trade Licensing Acts regulate the relevant categories of brokers, intermediaries, while in Slovakia the relevant categories of financial intermediaries are not being regulated by the Trade Licensing Act, but by a separate law.

However, an inspiration from the German legal order could be a possible legal regulation by which the authority in charge of granting license would change. It can be derived from the currently valid German legal environment that anyone who wants to broker insurance and reinsurance contracts must obtain a particular license from the chamber of industry and commerce. This would mean, the authority in charge of licensing would be the Slovak chamber of industry and commerce instead of the National Bank of Slovakia.

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