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Determinants of Agricultural Export Trade: Case of Fresh Pineapple Exports from Ghana

ABSTRACT

Aims: This study is purposed on informing future trade policy decisions on how the fresh pineapple export industry of Ghana can be revitalized following declines in both volumes and value of exports since the year 2004. To achieve this, effort is made to identify and assess the magnitude and effects of key determinants of fresh pineapple exports from Ghana for the period 1984-2009.

Study Design: The study involves separate consideration of value and volume of exports as explained variables, and sourcing of ways by which beneficial implications noted could be maximized for both variables, while minimizing adverse ones in the process.

Place and Duration of Study: This study solely involves the use of secondary data and own-computations on volume and value of pineapple exports, production, domestic demand, export price faced by exporters, terms of trade index of exports, real effective exchange rate, comparative export performance index and net inflow of foreign direct investment.

Methodology: Separate regression with value and volumes of exports as explained variables were estimated with the Ordinary Least Squares estimator, and tested for appropriate standard Gaussian assumptions, appropriateness of specification and stability of coefficients.

Results: The results show that Ghana's fresh pineapple export industry has competitive advantage and is more price-driven than volume driven. Both volume and value of exports have positive association with production, openness to trade, and the index of competitiveness. Both however have an inverse association with...
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domestic demand and net inflow of foreign direct investment. In as much as the value of exports increases with export price faced by exporters, the response for volumes exported is not significant. The effect of lagged volume of exports on both explained variables is as well not significant.

**Conclusion:** Reviving the fresh pineapple export industry requires increasing production (to be achieved through creation of favorable production conditions), improvement in quality of produce exported, improvement in the country’s openness to trade, and minimization or avoidance of domestic market capturing and tariff jumping types of foreign direct investments.

**Keywords:** competitive advantage; determinants; export growth; Ghana; pineapples.

1. **INTRODUCTION**

The extreme reliance of Ghana’s agriculture sector and the economy on the cocoa subsector cost the country a period of great depression during the mid-1960s to mid-1970s following the collapse of world cocoa prices (and other marketing and fiscal inefficiencies in the domestic environment). In effort to revive the agriculture sector and promote economic development, the then government introduced various initiatives to help shield the country from future shocks on the international market due to the highly volatile and fragile nature of agricultural trade. Among the numerous initiatives introduced was the agricultural diversification project (1991-1999), with a primary aim of promoting production and export expansion of non-cocoa tree and horticultural crops. This initiative did contribute effectively to improving export performance of the agriculture sector as a whole, although subsector performances did differ. Among the subsectors that responded positively to the initiative and has for over two decades now been perceived to have steered growth of the horticulture industry is the pineapple subsector. From virtual non-existence in the early 1980s, pineapple exports from the country increased to approximately 56,000 tonnes (by FAQ estimate) yielding a value of $68,340 (000) by the year 2004. Following shifts in market demand and other relevant economic and policy indicators, as well as the country’s slow adaptation to changes on the market however, the fresh pineapple export industry has experienced a steep decline in volume and value of exports since the year 2005.
Export of pineapples as shown in Fig. 1 declined in terms of volume (based on FAQ data) from 56,094 tonnes in 2004 to 9,971 tonnes in 2010, increasing thereafter to 45,999 tonnes in 2011. These figures correspond to values of 68,343 ($1000), 3,531 ($1000) and 51,144 ($1000) respectively. With the country's slow adaptation to developments on the international market by virtue of persisting local policy, structural and biophysical constraints, Ghana's share in European pineapple imports is quoted to have fallen by 18 percent between 2003 and 2007 [1]. In effort to revitalize the pineapple subsector (and other non-traditional crops) in terms of export, the government has since the year 2010 introduced concessions on income-tax to exports, thereby taxing exporters of pineapples at the company tax rate of 8 percent instead of the standard 35 percent regardless of export performance [2]. In another scheme, exporters are provided direct export incentives through company income tax rebates according to export performance. Effective revitalization of the pineapple subsector in spite of all these efforts and incentives, may require improvement in quality of exports (in terms of MD2 and the other three existing varieties namely Smooth cayenne, Sugar loaf and Queen Victoria), as well as increases in volume and value of exports. Achieving these however requires identification of existing associations between value and volume of pineapple exports and key determinants of export trade, capturing the effect of quality through a competitiveness index (Primarily the CEP).

Fig. 1. Developments in pineapple exports from Ghana

*Data Source: Agricultural Trade Database of FAO (FAOSTAT)*
By this, the present study is purposed on informing future trade policy prescriptions on how the pineapple exports dimension of the subsector can be revitalized through identification and assessment of the magnitude and effects of key determinants of fresh pineapple exports from Ghana for the period 1984 to 2009.

2. LITERATURE REVIEW

Historically, the share of trade in gross domestic product (GDP) of many nations has been an important ingredient for growth and development. In developing countries however, the export of primary commodities and import of finished products may define the basic structure of the economy. In an attempt to explain or predict the type of goods and services exported and imported by nations, their market destinations, and the underlying economic and political conditions, several theories have been formulated.

According to the scholarly review by [3], notable theories justifying free trade include classical tenets of absolute advantage and comparative advantage espoused by Smith and Ricardo respectively, and neo-classical models such as the Heckscher-Ohlin and New Trade Theory (NTT). Although free trade policies have been heavily criticized in literature, they are still utilized to advance trade liberalization especially in developing countries [4]. Thus, it is within the ambit of the free trade paradigm that trade liberalization policies were instituted in many developing countries as an alternative to the import-substitution economies in the 1980s.

Ghana represents an interesting model country that could offer empirical evidence for the corollaries of trade liberalization regime. The striking decline in economic growth recorded in post mid-1960s led to the implementation of trade policy reforms to salvage the economy from collapse. Specifically, Ghana implemented the Structural Adjustment Programme (SAP) in 1983 geared towards repositioning the economy on the path of desired economic growth. As noted by [5], Ghana's trade reform in 1983 and its later fortification in 2005 resulted in diversification and growth of the agricultural sector. The main objective of the current economic policy reforms of Ghana is to promote export-led growth through agriculture and to enhance international competitiveness.

In many sub-Saharan African countries, exports of non-traditional commodities including fruits and vegetables have increased [6] with Europe serving as the primary export destination for most horticultural exports. The situation is not different in
Ghana as adoption of the SAP and other economic policy reforms stimulated export-growth of fruits and vegetables as new addition to traditional export crops like cocoa. Following the wave of trade reforms especially in developing countries, many empirical scholarships have emerged. We generally review some of such studies, and place emphasis on areas that are particularly pivotal to our paper. Various authors have studied the determinants of cross-country agricultural commodity exports and recommended plausible variables accordingly. We take a look at some of these variables to inform our empirical study.

Deemed a key supply side determinant of export growth, output (production) of primary agricultural commodities has been noted to yield beneficial implications for exports in several studies. In as much as increments in production is deemed bad for trade in a closed economy due to the downward pressure such increments induce on prices, in open economies however, increased production offers a great opportunity for export expansion through surpluses. For example, in assessing the competitiveness and determinants of cocoa exports from Nigeria, [7] discovered a strong positive impact of increments in cocoa production on volumes exported. Similarly, [8] discovered a significant positive association between output of cocoa and volume of exports from Ghana. In assessing the determinants of agricultural exports through OLS estimation of export supply regressions with primary emphasis on cocoa and rubber from Nigeria, [9] discovered a significant positive effect of production on exports of both cocoa and rubber from Nigeria. In a similar study for India but on tomato exports, [10] discovered a significant negative association between production and export growth for tomato in India. Being against their initial expectation however, the authors attributed this discovery to a possible coincidence between domestic and international production of the commodity.

In contrast to the general positive association expected and mostly observed between production and exports however, a general ‘pulling (negative) association has been noted in literature between domestic demand and export growth. In as much as domestic production creates surplus by which foreign exchange is earned through exports, higher level of domestic demand as proposed by [11] reduces the resources devoted to exports. This consequently reduces the volume exported, and possibly value in case of minor exporting nations (as minor exporters are mostly price takers). In their analysis on the determinants of cocoa and rubber exports from Nigeria, [9] discovered a significant negative association between domestic consum-
ption and export growth for both cocoa and rubber. Similarly, in assessing the competitiveness and determinants of cocoa exports, [8] found a significant negative association between domestic consumption and cocoa export growth for Ghana.

Generally, a fair share of the studies investigating the determinants of agricultural export performance shows that in many least developed countries (LDCs), commodity price variables are very important drivers of exports. As proposed by [12], prices generally serve as a conduit through which relevant economic policies affect agricultural variables such as production, supply, exports and income. In affirming the importance of commodity prices for export growth, [13] noted a strong impact of foreign prices on export performance for South Africa’s manufacturing sector. Although observing a negative effect of foreign price on export growth for Uganda in the long-run (which was deemed a mixed signal), [14] discovered a significant positive association between the second and third lags of foreign price and export growth for the country in the short-run. The short-run association observed conforms to proposition by [15]. Similarly, in accessing cloves export response to trade liberalization in Tanzania, [16] discovered a significant positive association between foreign price and export growth in both the short and long-run. In contrast to these significant associations however, [7] found no significant effect of export price on volume of cocoa exports from Nigeria. Similarly, [9] found no significant effect of world price on volumes of cocoa and rubber exports from Nigeria.

Although several drivers of export have been proposed in literature, one amongst the lot that has from the early 1990s till date received much attention in export supply response studies is the terms of trade index of exports. Openness to trade as suggested by [17] presents countries not only with market and trade opportunities, but also introduces exporters to competition from other competing countries, thereby promoting efficiency in the process. Efficiency as noted in production, trade and development economics is a stimulator of competitiveness and hence export performance and growth. In a study to assess the effect of agricultural and financial sector reforms on export growth of cotton lint from Pakistan, [18] found that export of cotton lint from the country is stimulated by increasing world demand for the commodity, export competitiveness of the country, and by increase in trade openness. In affirming the positive association between openness to trade and exports, [17] discovered a significant positive effect of terms of trade index on exports from Cameroon for the period 1970-2008. In a study on ‘Rethinking policy options for
export earnings, [19] discovered that deterioration in terms of trade index is associated with contraction of export earnings. Similarly, [14] found a significant positive association between the index of trade openness and export growth for Uganda in both the short- and long-run. This discovery by [14] affirms earlier results from [20] of a positive effect of terms of trade on exports from Uganda. In addition to the terms of trade index, [20] also found a significant positive association between lagged export growth and current export growth.

From the extant literature, quite interesting views have been expressed on the impact of exchange rate on agricultural exports. In as much as some analysts estimate the effect of changes in nominal exchange rate on exports, others with policy interest mostly use the real exchange rate due to the latter's ability to adjust for purchasing power differences in currency of trading partners. In contrast to the nominal exchange rate where increments in the rate reflect currency depreciation, increments in real exchange rate reflect currency appreciation, the two consequently yielding contrasting implications for exports. In as much as currency depreciation according to economic and trade theory makes exports cheaper and demand generally higher, currency appreciation usually dampen export-growth. In a study to assess the determinants of export growth rate in Uganda for the period 1987-2006 however, [14] found a mixed signal (positive effect) for the association between real exchange rate and export growth in the long-run. The short-run association was however not significant. The latter observation conforms to proposition by [20] that real exchange rate has insignificant effect on export growth rate. In contrast to the insignificant association and mixed signal discovered by [14,20] however, [21] noted a significant negative association between real exchange rate and export growth for India. Upon this outcome, he appropriately inferred that a fall in domestic prices due to exchange rate depreciation makes exports cheaper in the global market, and this consequent stimulates demand. In affirming the discovery by [21,22,23] found a positive association between depreciation in real exchange rate and export growth. On the nominal side of this rate, [24] found a significant positive association between nominal exchange rate and exports of rubber from Nigeria. Although a priori expecting a positive association between the nominal exchange rate of Nigeria and cocoa exports from the country, [7] rather observed a significant negative association between these two indicators. This unexpected outcome was attributed to declining
productivity of the Nigerian economy and a corresponding weak currency of the country.

Under favorable domestic production and marketing conditions, foreign direct investment (FDI) stands fueling export growth in less developed economies. This claim is made on grounds that, such investment have the potential to advance technological process, and improve efficiency and quality of exports. Besides creating favorable trading relationship between the recipient (host) country and its investing partners, foreign direct investments do strengthen capital formation, innovation capacity and organizational and managerial practices. In spite of these general beneficial implications of FDI noted worldwide, quite controversial implications of FDI on exports have been found in economic, business and trade literature. Although some researchers including [25] affirm a significant negative relationship between FDI and export growth, [21,26] found no significant effect of FDI on export growth. Others, including [27,28] found a significant positive association between FDI and export performance. In countries where domestic demand for some agricultural commodities is generally high, most of the investments (FDI) made in such commodities purpose on capturing domestic markets instead of stimulating export growth, while others capture not only domestic markets, but also use that as a means to jump tariffs. Whenever investments are made with a domestic market capturing or tariff jumping motive, they usual yield detrimental implications for export growth [26]. Investments however with export promotion motive usually yield beneficial implications for exports.

3. PINEAPPLE SUPPLY AND EXPORT CHAIN FOR GHANA

Ghana produces four main varieties of pineapples, namely the Smooth cayenne (SC), MD2, Sugar loaf and Queen Victoria. Production and exports are however dominated by the Smooth cayenne and MD2 varieties. Exports of the Smooth cayenne variety of fresh pineapples to Europe commenced in 1984, marking the beginning of pineapple exports from Ghana based on available data from FAO. In the development phase of pineapple exports, small-holders accounted for at least 50% of volumes of pineapple exported from the shores of Ghana [29]. Following a decrease in profitability of fresh pineapples production due to unexpected shifts in demand by foreign consumers toward the MD2 variety and the inability of most small-holders to quickly adapt to the situation, the number of small-holder pineapple producers has
quickly adapt to the situation, the number of small-holder pineapple producers decreased from 1600 to less than 200 engaged in commercial production. As of the year 2004, the country had a total number of 50 exporters. This number has decreased to 14 recently, with about eight of the exporting firms being responsible for 93% of fresh pineapple exports from Ghana [29]. The number of processing firms engaged in juice production is reported by [29] to have increased following the growth of the sector between the years 1999 and 2004. Most of the processing factories however have for over five years now been out of operation due to lack of pineapples for processing. This is due to drifting of majority of the producers from the pineapple sub-sector based on the transition challenge from smooth cayenne and the other varieties to MD2 and the resulting decrease in profitability. In spite of this however, firms and producers that were able to convert production from the smooth cayenne variety to MD2 pineapples are reported to have had heterogeneous impact on export volumes, with most of them witnessing major increases in their export shares [29]. By this, growth of the pineapple sub-sector is believe to be inhibited by production and productivity challenges, slow adaptation to market shifts and inability of majority of the producers to transit to new varieties of the pineapple fruit to help meet demands in primary and secondary destinations. With a total of 14 export destinations as of the year 2007, the number of destination countries for pineapple exports from Ghana decreased to 8 by the year 2010, primarily due to import diversion toward MD2 varieties by such countries (see Table 1).

<table>
<thead>
<tr>
<th>Share in pineapple exports</th>
<th>2007</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 0% and 1%</td>
<td>United States of America, South Africa, Egypt, Libya, Spain, Netherlands, Vietnam</td>
<td>South Africa, United Arab Emirates, Libya, Egypt, Spain, Germany, Denmark, United Kingdom</td>
<td>Spain, Netherlands</td>
</tr>
<tr>
<td>Between 1% and 10%</td>
<td>Italy, Switzerland, Germany, United Kingdom, United Arab Emirates</td>
<td>Morocco, Italy</td>
<td>United Kingdom, Morocco</td>
</tr>
<tr>
<td>Between 10% and 25%</td>
<td>France</td>
<td>France</td>
<td>Italy, France</td>
</tr>
<tr>
<td>Between 25% and 100%</td>
<td>France, Belgium</td>
<td>Switzerland, Belgium</td>
<td>Switzerland, Belgium</td>
</tr>
</tbody>
</table>

*Source: Detailed world Agricultural Trade Flows (FAOSTAT) [31]*

Ghana has a relatively less complex pineapple supply and export chain (see Fig. 2) compared to chains for commodities like cocoa and coffee observed in Ghana and in countries like Ethiopia [see chains in 8,30]. Like many other commodities
(although usually ignored in various supply chains), the pineapple supply chain commences from the factor market side with sourcing of relevant inputs, especially high quality crowns, fertilizer and fumigants. Achieving higher yields requires the undertaking of important cultural practices like weeding, spraying, fertilization among others. Three groups of people have been identified so far to engage in pineapple production; the small-holder as an individual, co-operatives (organization owned and run jointly by a group of small-holders), and large scale producers (nucleus farmers/exporters). In as much as some of the small-holders sell directly to wholesalers on the domestic market by themselves, or through co-operatives (in case of contract), majority of the farmers sell their produce to the larger producers/exporters. Similarly co-operatives have the option of selling directly to wholesalers/retailers and to consumers, or selling their produce to exporters (due to limited capacity for most cooperatives to engage directly in export).

![Fig. 2. Pineapple supply and export chain for Ghana](source: Authors construct)

After sorting and grading, exporters mostly export grades with medium to highest quality, and either sell the relatively lower grades to domestic processors or directly to wholesalers/retailers and to consumers. In times of shortage of the
produce on the market, both domestic processors and exporters source pineapples from other exporting countries to keep them in operations. As shown in Table 2, pineapples exported from the country are either in the fresh form or canned. Over the period 1997 to 2011 however, there have been very low value added in pineapple exports from the country, as most of the produce exported are in the fresh form. The European Union continues to be the major destination for exports of pineapples from Ghana and from other major exporting countries worldwide (see Appendix 2) with Belgium, Switzerland, France and Italy being the primary export destinations for Ghana. Return of any pineapple exported from the shores of Ghana unto the local market is mostly in a processed form (from foreign processing companies). Pineapples are transported unto foreign markets (destinations) either by sea (mostly for MD2 variety) or by air (mostly for Smooth Cayenne variety).

Table 2. Composition of pineapple exports from Ghana

<table>
<thead>
<tr>
<th>Year</th>
<th>Fresh pineapple exports ($1000)</th>
<th>Canned pineapple exports ($1000)</th>
<th>Total pineapple exports ($1000)</th>
<th>Value added (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>9,998</td>
<td>0</td>
<td>9,998</td>
<td>0</td>
</tr>
<tr>
<td>1998</td>
<td>11,676</td>
<td>0</td>
<td>11,676</td>
<td>0</td>
</tr>
<tr>
<td>1999</td>
<td>11,593</td>
<td>0</td>
<td>11,593</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>11,514</td>
<td>5,926</td>
<td>17,440</td>
<td>33.98</td>
</tr>
<tr>
<td>2001</td>
<td>7,933</td>
<td>5,655</td>
<td>13,588</td>
<td>41.62</td>
</tr>
<tr>
<td>2002</td>
<td>15,520</td>
<td>5,500</td>
<td>21,020</td>
<td>26.17</td>
</tr>
<tr>
<td>2003</td>
<td>33,403</td>
<td>3</td>
<td>33,406</td>
<td>0.01</td>
</tr>
<tr>
<td>2004</td>
<td>68,343</td>
<td>253</td>
<td>68,596</td>
<td>0.37</td>
</tr>
<tr>
<td>2005</td>
<td>15,664</td>
<td>109</td>
<td>15,753</td>
<td>0.69</td>
</tr>
<tr>
<td>2006</td>
<td>51,367</td>
<td>29</td>
<td>51,396</td>
<td>0.06</td>
</tr>
<tr>
<td>2007</td>
<td>9,950</td>
<td>282</td>
<td>10,232</td>
<td>2.76</td>
</tr>
<tr>
<td>2008</td>
<td>6,260</td>
<td>94</td>
<td>6,354</td>
<td>1.48</td>
</tr>
<tr>
<td>2009</td>
<td>6,692</td>
<td>190</td>
<td>6,882</td>
<td>2.76</td>
</tr>
<tr>
<td>2010</td>
<td>3,531</td>
<td>18</td>
<td>3,549</td>
<td>0.51</td>
</tr>
<tr>
<td>2011</td>
<td>51,144</td>
<td>18</td>
<td>51,162</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Source: Authors computation with data from FAOSTAT (Agricultural Trade Database) [31]

4. METHODOLOGY

In estimating export supply functions, several approaches ranging from co-integration techniques (notably the Engle-Granger approach and Johansen Full Information Maximum Likelihood test) and bound test to OLS estimation of static models have been applied in literature. In as much as the co-integration techniques and bound test are generally useful, they only yield efficient estimates for extended series (at least 30 years), factoring in long- and short-run effects. Usually, it becomes impossible (due to problems with lag order selection) to apply the Johansen
technique (deemed the most efficient co-integration approach) for analyzing data series with less than 28 observations. Bearing in mind the scope (1984-2009, because pineapple exports from Ghana commenced in 1984 and data on domestic consumption was up to 2009, as of the time data was collected and analyzed) of our study, we employ the OLS estimation technique to assess the magnitude and effects of key determinants of exports based on the literature reviewed. To avoid discussing output of regressions hauling nonsense correlation between unrelated random walks however, residual series for the regressions specified in the subsequent sections are tested for stationarity and for appropriate standard Gaussian assumptions. The coefficients are as well tested for reliability through the CUSUM and CUSUM of squares tests, and the respective equations tested for misspecification through a RAMSEY Reset test. In this study, two primary equations are estimated; one with value of exports as the explained variable, and the other with volume of exports as the explained variable. Use of two different explained variables is to help identify how the effects of the respective explanatory variables on one explained variable (volume of exports) translate into the other (value of exports).

4.1 Sources of Data

All the data (secondary) used in this study were gathered from the agricultural production, supply and trade database of FAO (FAOSTAT [31]) and the United Nations Conference on Trade and Development Statistics (UNCTADSTAT [32]). Data gathered from the UNCTADSTAT include real effective exchange rate, terms-of-trade index of exports (as against that for goods and services) and foreign direct investment (Net inflows). All other series except export price faced by Ghana for pineapples and comparative export performance index of exports (CEP) are gathered from FAOSTAT [31]. Based on differences in quality of products exported by countries, as well as spatial differences in policy environment (including barriers to trade–tariffs among others), countries face respective export prices that are usually different from the average world price for a given commodity. Along this line, we make use of the export price faced by Ghana for export of pineapples and not the price quoted on the world market as is usually seen in other studies. The export price is calculated based on value and volume of exports as follows:

\[
\text{Export price} = \left[\frac{\text{Value of export}}{\text{Volume of export}}\right] \times 1000
\]
The outcome is in $/tonne. Multiplication of the fraction by 1000 is due to the fact that value of exports gathered from the FAOSTAT is in $1000, while volume of exports is in tonnes.

### 4.2 Model Specification

Based on the empirical literature reviewed and objective of this study, our model is specified econometrically as follows holding the following a priori expectations (for both value and volume of exports):

\[
\begin{align*}
\text{Ln (EXPTVal)} &= C + \text{Ln (Prod)} + \text{Ln (Domcons)} + \text{Ln (EXPTprice)} + \\
&+ \text{Ln (TOT)} + \text{Ln (REXR)} + \text{Ln (CEP)} + \text{FDI} + \text{Ln (EXPTVol (-1))} \quad (2)
\end{align*}
\]

\[
\begin{align*}
\text{Ln (EXPTVol)} &= C + \text{Ln (Prod)} + \text{Ln (Domcons)} + \text{Ln (EXPTprice)} + \\
&+ \text{Ln (TOT)} + \text{Ln (REXR)} + \text{Ln (CEP)} + \text{FDI} + \text{Ln (EXPTVol (-1))} \quad (3)
\end{align*}
\]

Where a priori, \{C, Ln (EXPTVol (-1)), FDI\} $<> 0$; \{Ln (Prod), Ln (EXPTprice, Ln (TOT), Ln (CEP)) $> 0$; \{Ln (REXR), Ln (Domcons)\} $< 0$

- Ln (EXPVal): Log of value of pineapple exports;
- Ln (EXPVol): Log of volume of pineapple exports;
- Ln (Prod): Log of domestic production of pineapple;
- Ln (Domcons): Log of domestic consumption (demand) of pineapple;
- Ln (EXPTprice): Log of export price of pineapple;
- Ln (TOT): Log of Terms-of-Trade Index of exports (measure of trade openness);
- Ln (REXR): Log of Real Effective Exchange Rate;
- Ln (CEP): Log of Comparative Export Performance Index (to help capture; Competitiveness: Improvement in quality and share of exports);
- FDI: Net inflow of Foreign Direct Investment$^1$;
- C: Intercept.

$^1$ Use of FDI in level instead of logging it is to make the specification externally valid and pave room for future replication by other researchers. In as much as the values obtained for the period under study are positive, some values for years before the scope of the study (1984-2009) are negative. This could preclude logging for extended period. In addition, data for some countries from the developing world shows negative net inflows in a significant number of years, and using log of FDI may require modification of our specification in situations where researchers want to apply the exact equation in their study.
Employed in this study, the log of comparative export performance index is defined as follows:

\[
\ln(CEP) = \ln \frac{X_{IB}}{X_{IA}}
\]  

(4)

Where
- \(X_{IB}\) - value of pineapple exports from Ghana;
- \(X_B\) - total value of agricultural exports from Ghana;
- \(X_{IA}\) - value of world exports of pineapple;
- \(X_A\) - total value of world agricultural exports.

Equations 2 and 3 are estimated with the OLS estimator and tested for appropriate standard Gaussian assumptions, appropriateness of specification (through a reset test) and stability of coefficients (through the CUSUM and CUSUM of Squares test). The Analysis involves use of data for the period 1984-2009.

5. RESULTS AND DISCUSSION

In testing for the appropriate standard Gaussian assumptions, the residuals from estimation of both equations 2 and 3 were found to be normally distributed, non-serially correlated and homoscedastic. This inference is based on observed Jarque-Bera values, Breusch-Godfrey Serial Correlation LM values (for the F-statistic) and Q-statistic, and F-statistic from the Breush-Pagan-Godfrey Heteroskedasticity Test. Appropriateness of the specification and stability of coefficients are affirmed by the F-statistic value from a Ramsey Reset Test and the CUSUM and CUSUM of squares test (see Fig. 3). As a check on spuriousness of our results, the residual series for each specification was tested for stationarity through the Augmented Dickey-Fuller unit root test, the outcome of which confirmed stationary (absence of unit root) nature of the residuals. In checking for issues with endogeneity as often claimed by some researchers when OLS is used in estimating a regression, a two-stage least squares estimation of the regression equations was performed (although results not presented here) and the output was consistent and perfectly in
Employed in this study, the log of comparative export performance index is defined as follows:

\[ \text{Index} = \frac{X_B}{X_A} - \frac{X_{iB}}{X_{iA}} \]

Where

- \( X_B \): value of pineapple exports from Ghana;
- \( X_{iB} \): value of world exports of pineapple;
- \( X_A \): total value of agricultural exports from Ghana;
- \( X_{iA} \): total value of world agricultural exports.

Equations 2 and 3 are estimated with the OLS estimator and tested for appropriate standard Gaussian assumptions, appropriateness of specification (through a reset test) and stability of coefficients (through the CUSUM and CUSUM of Squares test). The analysis involves use of data for the period 1984-2009.

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In interpreting the results, value of pineapple exports is noted to have a positive association with production, export price, terms of trade (trade openness) and index of competitiveness (increased share and quality of exports). Value of pineapple exports however has an inverse association with domestic consumption (demand) and net inflow of foreign direct investment. No significant association is found with respect to real effective exchange rate and lagged volume of exports. The intercept (C) term was also found highly significant and negative, implying that should conditions in all the other variables remain constant, the value of pineapple exports from Ghana would decrease significantly with time. This reflects a highly competitive nature of the world pineapple export industry and a relatively low power of Ghana in terms of share on the world market. As shown in Appendix 1, value of Ghana’s pineapple exports represents only 1.067% of world export shares (and 0.788% in terms of volume), compared to 40.625% (54.269%-volume) for Costa Rica, 14.123% (8.088%-volume) for Belgium, 11.429% (6.556%-volume) for Netherlands, 6.197% (3.232%-volume) for the United States of America and 3.543% (7.881%-volume) for the Philippines. A total of 98.77% of variations in export value are explained by the associations identified in this study. This statement is reflected by the adjusted R-squared value observed.

With the exception of the intercept term and export price which were found to have insignificant effects on volume of pineapple exports, similar associations were observed between volumes of export and all the other variables. Lagged volume of export is observed to have insignificant positive effect on both value and volume of exports. This once again affirms the lower share of Ghana’s pineapple exports on the world market and potentially, a relatively positive image of previous exports from Ghana. In as much as exports of larger exporting nations could induce an adding-up effect, thereby causing a decrease in price of future exports and possible decrease in exports (both volume and value), the effect observed in case of Ghana is not statistically significant. A total of 97.52% of variations in volume of pineapple exports are explained by the associations observed in this study. By this, with the exception of the insignificant effect of real effective exchange rate and export price observed for output of equation 3, all associations observed are in conformity with our a priori expectation. Associations observed in this study apply
only to pineapple exports and may not necessarily reflect effects on agricultural exports in the broader sense.

Table 3. Regression results

<table>
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<tr>
<th>Variables</th>
<th>Ln (EXPTVal) Coefficient</th>
<th>Ln (EXPTVal) Std. error</th>
<th>Ln (EXPVol) Coefficient</th>
<th>Ln (EXPVol) Std. error</th>
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<tr>
<td>C</td>
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<td>-0.310502***</td>
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<tr>
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<td>0.123463</td>
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<td>LnToT</td>
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<td>0.423276</td>
<td>0.757655*</td>
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<td>LnREXR</td>
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<td>-0.206847</td>
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<tr>
<td>LnCEP</td>
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<td>0.088092</td>
<td>0.185686*</td>
<td>0.088092</td>
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<tr>
<td>FDI</td>
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<td>0.000070</td>
<td>-0.000132*</td>
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<td>LnEXPTVol(-1)</td>
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<td>R-squared</td>
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<td>Adj. R-squared</td>
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<td>Q-stat (1)</td>
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<td>Q-stat (2)</td>
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<td>BG-LM Test: F-stat 2</td>
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<tr>
<td>B-P-G Het: F-stat</td>
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<td>0.393497</td>
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<tr>
<td>Rest Test F-statistic</td>
<td>1.638920</td>
<td>0.944763</td>
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<tr>
<td>ADF of Residual</td>
<td>-5.333056***</td>
<td>-5.333056***</td>
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***significant at the 1% level, *significant at the 10% level

Fig. 3. Stability test of coefficients

A one percent increase in domestic production of pineapple leads to a 0.98% increase in both value and volume of exports, significant at the 1% level. Increasing production of pineapple ensures adequate volumes of the produce for both domestic consumption and for exports. Most of the processing and exporting firms in the
country are reported by [29] to be out of operation due to lack of pineapples for processing and export. With majority of the smallholders (who supplied about 50% of total volume of exports in the developmental stages of the industry) drifting from the subsector following recent development in the destination markets, as well as decreased productivity driven by changes in other key indicators and policy environment, the annual volumes of pineapple in the country available for export and for meeting domestic consumption needs has decreased significantly, and this in part could be a relevant cause of the recent decline in exports. Increasing production of pineapple in the country, through drafting of incenting measures could go a long way to revitalize the industry. The positive association observed between production and exports conform to propositions by [7,8,9].

In as much as domestic production has a boosting or pushing effect on exports, domestic consumption on the other hand, as suggested by [8] has a pulling effect on both export volume and value. In the present study, a 1% increase in domestic consumption leads to a 0.31% decrease in both volume and value of export, significant at the 1% level. This observation affirms a suggestion by [11] that at relatively higher levels of domestic demand, the quantity of resources devoted to export is lower. By this, at lower domestic demand, the surpluses obtained from production lead to increased volume (and probably value) of exports. Neutralization of this significant pulling effect could be ensured through increasing volumes of production at rates equal to or well above that for domestic consumption.

A 1% increase in export price faced by the country leads to a 0.85% increase in value of exports (significant at the 1% level), but no significant effect on volume of exports. Lagged volume of exports is noted to have no significant effect on both value and volume of exports. From this, we infer that value of Ghana’s pineapple exports has been driven more by price faced by exporters than by actual volumes exported. This affirms competitiveness of Ghana in pineapple exports, thus a price-driven export rather than quantity driven exports. In addition, export demand is in theory believed to increase with a drop in price and vice versa, however, the inverse association observed in this study between price and volume of exports is not significant. This is an indication of competitive advantage of Ghana in export of the commodity. Improving on the quality of the country’s exports, and attracting higher prices could therefore go a long way to increase value of pineapple exports from Ghana.
The index of openness to trade (captured by Terms-of-Trade index of exports) yields positive implications for both value and volume of exports. A one percent increase in this index leads to a 0.76% increase in both value and volume of export, significant at the 10% level. Being open to trade opens doors to greater opportunities for countries that are purposed on diversifying their exports. In addition, it promotes efficiency in production and export through exposing the countries involved to fierce competition on the global market. Such exposure ensures drafting and implementation of export-growth enhancing policy measures, which go a long way to firmly anchor beneficial export trade in such countries. The effect of the index of openness to trade on exports as observed in this study is in conformity with propositions by [20,14,18].

The index of competitiveness (captured by CEP-comparative export performance index) is observed to enhance both value and volume of exports, and the effect is significant at the 10% level. In as much as the association is positive and significant, the responsiveness is quite low, implying that increase in share and quality of pineapple exports from Ghana, although stimulates volumes and value of exports, such increments have been quite low. This is due to the fact that increases in volume of exports haven’t been continuous and there equally have been quite some quality challenges in the sector. Slow adaptation of the country to shifts and developments in the global pineapple market, generally precludes the country from exploiting beneficial (or profitable) developments to the maximum. With the country’s exports having no significant adding-up effect on world exports, increasing both the volumes and quality of pineapple exports from the shores of Ghana could help revitalize the sector and position it positively in wait for profitable developments in the near future.

Noted in empirical literature, the role of FDI in export promotion in developing countries has been quite controversial. In as much as some studies find a positive effect of FDI on export promotion [e.g. 27], others find insignificant or weak effect of FDI on exports [e.g. 26]. Other researchers including [25] found a negative association between FDI and export growth. Highlighted in such studies, the effect of FDI depends on the motive for such investment. Tariff-jumping types of investmentor investments that have a primary purpose of capturing domestic markets mostly do not contribute to export growth [26], while export-oriented investments generally contribute to export growth by taking advantage of a country's comparative and competitive advantages. Observed in Ghana, most of the investments noted so far in
the pineapple sub-sector have been towards capturing domestic markets (with majority being towards value addition to meet domestic demand and jumping tariff through establishment of both local and foreign centers of trade). Such investments tend to dampen trade. In the present study, a one percent increase in net inflow of foreign direct investment is associated with a 0.013% decrease in both value and volume of pineapple exports, significant at the 10% level.

In summary, should there be no major improvements in current economic, policy and marketing environments, value of pineapple exports will decrease significantly with time, although the decrease in volume may not be significant. In as much as value of exports is driven by prices faced by exporters, the effect of export volumes on the value is relatively insignificant. Both value and volume of pineapple exports from Ghana are noted to increase with increasing production, openness to trade and improvements in export performance. They however decrease with increasing domestic consumption and net inflow of foreign direct investment, based on the domestic market capturing and tariff jumping nature of majority of such investment. Real effective exchange rate (as a surrogate measure of incentive) is found to have no significant effect on both value and volume of pineapple exports from Ghana.

6. CONCLUSION

In identifying the key determinants of pineapple exports from Ghana, effort was made to estimate separate regressions with value of exports and volume of exports being the explained variables in the respective regressions. The study reveals that, should conditions for all the variables considered remain constant, value of pineapple exports from Ghana would with time decrease significantly. This reflects the highly competitive nature of the pineapple industry globally, and a need for Ghana to learn to adapt appropriately to market shifts in the shortest possible time. Both value and volume of exports were found to have a positive association with production, openness to trade and improvement in quality and share of exports (captured by the CEP index). Both however have negative association with domestic demand and foreign direct investment, with effect for the latter case being attributed to the tariff-jumping and domestic market capturing motive of majority of such investments in the country. A positive association was as well observed between export price faced by exporters and the value of pineapple exports. The corresponding association in terms of volume of exports however was not significant. The
effect of lagged volume of export on both current value and volume of exports was not significant. This implies that, Ghana's pineapples export is more price-driven than volume driven, an attribute reflecting competitive advantage of the country in pineapple export. To increase both value and volume of exports, measures should be put in place to increase production of pineapples for exports and domestic processing. In addition measures should be put in place to improve the quality of pineapples (both Smooth cayenne and MD2) exported from the country. Improving on the country's openness to trade could as well go a long way to enhance export growth. Although foreign direct investments are generally perceived to complement efforts by domestic industries to restructure production and export facilities and institutions, future efforts to attract foreign direct investments should place strong emphasis on identification of the motive behind such investments. In so doing, emphasis should not only be placed on achieving benefits from FDI inflows, but in attracting FDI with export growth motive; hence if attraction of such investment is to enhance export growth, domestic market capturing and tariff jumping types of investment should be minimized.

COMPETING INTERESTS
Authors have declared that no competing interests exist.

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## APPENDIX

### Appendix 1. World exports of pineapple

<table>
<thead>
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<tbody>
<tr>
<td><strong>Volume of exports (tonnes)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World</td>
<td>2,884,571</td>
<td>2,849,733</td>
<td>2,908,082</td>
<td>3,146,214</td>
<td>2,947,150</td>
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<td>Africa</td>
<td>102,568</td>
<td>94,103</td>
<td>81,516</td>
<td>130,032</td>
<td>102,055</td>
<td>3.463</td>
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<td>Americas</td>
<td>1,870,632</td>
<td>1,889,129</td>
<td>2,041,255</td>
<td>2,114,977</td>
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<td>Asia</td>
<td>328,478</td>
<td>250,105</td>
<td>208,368</td>
<td>304,534</td>
<td>272,871</td>
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<td>Europe</td>
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<td>616,259</td>
<td>576,836</td>
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<td>137</td>
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<td>576,419</td>
<td>596,317</td>
<td>592,765</td>
<td>20.113</td>
</tr>
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</table>

| **Value of exports ($1000)** |           |           |           |           |                |          |
| World               | 1,555,447 | 1,513,907 | 1,543,218 | 1,727,204 | 1,584,994      |          |
| Africa              | 43,172    | 35,882    | 32,462    | 91,174    | 50,673         | 3.197    |
| Americas            | 814,171   | 839,997   | 919,315   | 962,169   | 883,913        | 55.769   |
| Asia                | 80,557    | 70,583    | 63,916    | 89,479    | 76,134         | 4.804    |
| Europe              | 617,493   | 567,270   | 527,379   | 584,230   | 574,093        | 36.222   |
| Oceania             | 54        | 175       | 146       | 152       | 132            | 0.008    |
| Belgium             | 239,429   | 240,854   | 206,754   | 208,312   | 223,837        | 14.123   |
| Brazil              | 16,381    | 10,580    | 980       | 1,402     | 7,336          | 0.463    |
| Costa Rica          | 574,921   | 604,517   | 677,392   | 718,725   | 643,889        | 40.625   |
| Cote d’Ivoire      | 29,110    | 21,529    | 21,528    | 27,112    | 24,820         | 1.566    |
| Germany             | 37,588    | 35,887    | 42,407    | 47,804    | 40,922         | 2.582    |
| Ghana               | 6,260     | 6,620     | 3,531     | 51,144    | 16,907         | 1.067    |
| Italy               | 18,032    | 16,117    | 18,270    | 17,234    | 17,413         | 1.099    |
| Netherlands         | 224,055   | 179,581   | 150,628   | 170,327   | 181,147        | 11.429   |
| Philippines         | 61,653    | 53,115    | 42,359    | 67,491    | 56,155         | 3.543    |
| United Kingdom      | 9,960     | 17,485    | 15,808    | 22,145    | 16,350         | 1.032    |
| United States of A  | 93,405    | 89,096    | 102,735   | 107,659   | 98,224         | 6.197    |
| European Union      | 616,925   | 566,792   | 526,887   | 583,708   | 573,578        | 36.189   |
### Appendix 2. World imports of pineapple

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<th></th>
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</table>
Canon Tong, Michelle Suen, Anthony Wong,
Business, Government and Law, University of Canberra, Australia,
Newcastle Business School, Faculty of Business and Law,
University of Newcastle, Australia,
Department of Business Administration,
Caritas Institute of Higher Education, Hong Kong

The Effects of Diagnostic and Interactive Performance Measurement Systems on Organisational Commitment and Job Satisfaction: The Perception of Information and Communication Technology Practitioners in Hong Kong

Abstract: The rapid and accelerating development of information and communication technology (ICT) has caused an unprecedented expansion in Hong Kong’s ICT industry and a simultaneous increase in the demand for ICT practitioners. With the intention of helping ICT-related companies in Hong Kong retain valuable employees, this research identifies the effects of diagnostic and interactive use of performance measurement systems (PMS) on organisational commitment and job satisfaction. The research adapted the measurement from [1] and [2] in diagnostic and interactive performance measurement, organisational commitment were adapted from [3] whilst job satisfaction with five dimensions of compensation was adapted from [4]. With a critical review of these related literatures, two research questions and five hypotheses were formulated to explore ICT practitioners’ perceptions of job satisfaction, organisational commitment and PMS. An Internet-based anonymous questionnaire, using measures adopted from previous validated research, collected the research data. Six thousand invitation emails sent to randomly selected ICT practitioners in Hong Kong provided 302 responses for statistical analysis. Findings indicate that diagnostic and interactive use of PMS positively influences the job satisfaction and organisational commitment of employees and suggest that job satisfaction and organisational commitment are correlated. The study also found that
employees’ position in the organisation and the nature of the business influences both job satisfaction and commitment, but that their marital status only influences job satisfaction and not organisational commitment; other demographics have no influence on either satisfaction or commitment. Results from this study provide insights for managers and owners of companies in Hong Kong’s ICT sector by suggesting how they can formulate appropriate strategies to reduce staff turnover. The research contributes to the literature related to the appropriate use of PMS in ICT organisations as a means of improving organisational commitment and job satisfaction.

**Keywords:** diagnostic; interactive; performance measurement; organisational commitment; job satisfaction; Hong Kong.

1. **INTRODUCTION**

1.1 **Background of the Research**

An organisation’s survival depends on its operational culture and performance. Performance measurement systems (PMS) enable organisations to understand how closely their internal performance adheres to organisational objectives and strategic goals [5]. Consequently, organisational commitment and job satisfaction are associated with effective outcomes and have a positive influence on organisational performance; organisations that adopt an optimum organisational culture with a positive attitude enhance their performance [6]. Human expertise and technology have been advancing at an ever-increasing speed during the past few decades, resulting in rapid changes in human lifestyles. This is especially true of the information and communication technology (ICT) sector, which is constantly developing new and improved advanced electronic devices and applications. Due to the rapid expansion of this ICT particular sector, there has been a substantial increase in demand for ICT practitioners in most developed regions of the world including Hong Kong (United Nations Conference on Trade and Development [UNCTAD], 2010). The rapid and accelerating development of ICT technology has caused unprecedented changes in Hong Kong’s society. The substantial adoption of ICT-related technologies, products and services by both the private and public sectors in Hong Kong, such as mobile phones, personal computers and the Internet, appears to be one of the major determinants for its success. Extensive use of the Internet in Hong Kong has enabled businesses and individuals to communicate,
transact and transfer knowledge and data more effectively, enhancing overall efficiency, effectiveness and productiveness [7]. Therefore, it is imperative to study the importance of performance management systems to organisational commitment and job satisfaction of employees in the ICT industry in Hong Kong.

Prior research has drawn a relationship between PMS and the behavior and attitude within an organisation, which contributes to the achievement of organisational objectives [2,8,9]. Further, prior research on the effects of diagnostic and interactive management control systems (MCS) on organisational performance produced varying results, and no empirical studies have been conducted in relation to the moderating effects of interactive PMS as a component of a MCS [1,10]. None of the relevant literature examined for this study addressed the different uses of PMS and their effects on individual employee behavior. Therefore, this research seeks to fill this gap by examining the effects of diagnostic and interactive use of PMS on organisational commitment and job satisfaction.

1.2 The Importance of Hong Kong’s ICT Sector

The increased adoption of ICT technology in Hong Kong has led to a substantial increase in spending on ICT products and services from both the private and government sectors. This may be partly due to the rapid increase in local demand for ICT products and services and partly due to the resurgence of trade following the aftermath of the 2009 tsunami [7]. Organisations that want to take advantage of the increasing demand for ICT products and services should deal proactively with the corresponding increase in demand for ICT professionals, who are an essential component of an organisation’s effectiveness. Findings from previous studies suggest that different components of organisational commitment positively affect organisational effectiveness and therefore performance [11,12]. Previous studies have also concluded that employees with high organisational commitment have higher expectations of their performance and thus perform better [13,14,15]. Therefore, employee commitment to an organisation is a major issue for human resource professionals in maintaining organisational sustainability [16]. Although the research studies the situation in Hong Kong, the constructs used are adapted from studies conducted in other western countries in order to increase the global implications of the findings.
2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In order to identify the research gap, this section reviews the literature relating to the effect of diagnostic and interactive use of performance management systems (PMS) on organisational commitment and job satisfaction.

2.1 Performance Management Systems

As used widely to evaluate organisational performance [17], Performance Management Systems (PMS) are a set of metrics used to formulate strategic plans and monitor the achievement of organisational goals [18] and help management to identify areas requiring attention and improvement, monitor project progress, improve staff communication, convey management expectations, enhance accountability and motivate employees with rewards based on individual performance [19,20,21,22].

The diagnostic and interactive uses of PMS are two management tools that balance this tension within an organisation to help attain established organisational objectives [1]. PMS assist in the identification of areas that strengthen accountability, improve communication, motivate employees through performance-based rewards, monitor progress, and communicate expectations or areas requiring attention [19,20,21,22].

2.1.1 Diagnostic and interactive use of PMS

The diagnostic use of PMS can be considered the traditional monitoring of progress toward organisational goals with a focus on exceptions and deviations from set standards of performance for corrective actions and tight controls over strategies and operations [1,2]. It is usually characterized by an extremely tight communication and information flow structure, which may hinder learning and risk-taking innovative behavior [1]. This monitoring device, which is based on pre-set standards and procedures, constrains risk-taking innovative behavior to ensure predictable organisational objectives are being met as originally planned and designed [9]. It serves to eliminate mistakes and negative variances [1].

In contrast to the diagnostic use of PMS, the interactive use of PMS facilitates risk-taking innovative behavior and promotes learning throughout an organisation [1]. When using interactive PMS, interactive processes such as top management teams interact regularly with their subordinates and engage in debates and face-to-face challenges with them during their decision-making processes [2,8]. These interactive
processes allow dialog throughout an organisation and strategic uncertainty to be resolved, making the development of new ideas and initiatives possible [2,8].

[23] concluded that organisational performance is improved through the appropriate diagnostic and interactive use of PMS. Widener’s view is based on the assumption that an interactive control system is interdependent with both the diagnostic use of a PMS and the boundary system. The interactive use of a PMS affects the diagnostic use of a PMS, providing the required mechanism that makes the interactive control system effective.

[1] revealed that organisational learning, entrepreneurship, innovativeness, and market orientation can be positively enhanced by the interactive use PMS. Conversely, there is a negative effect on performance capabilities when PMS is used diagnostically. Such findings concur with those of [24] and [25]. The relationships between the diagnostic and interactive use of PMS and organisational performance are not mediated by their capabilities. However, [1] considered that performance variables in the study were restrictive and were responsible for the non-mediating effect.

The diagnostic and interactive uses of PMS can be complementary [1]. The diagnostic use of PMS can be described as a single-loop learning process, which provides the basis for the interactive use of PMS and double-loop learning, which was identified by [1]. [26] considered that the diagnostic use of PMS is only a tool for performance measurement, while the interactive use of PMS is a powerful tool for strategies and plans development [1]. In view of the thorough and highly respected PMS-related work of [1,27] and [2,8,9], their relevant models were adapted for the purpose of this study.

2.2 Organisational Commitment

Organisational commitment has attracted the attention of both researchers and practitioners over the years [11,28,29], mostly due to the consequences, correlations, and antecedents of commitment that have implications on work behavior and employee performance, including organisational effectiveness, job performance, and organisational citizenship behavior. The extent of employees’ organisational commitment has a major effect on organisational performance [3,30,31,32]. Employees with strong organisational commitment tend to perform better [33,34,35].
Conversely, low organisational commitment is often associated with problematic issues such as high absenteeism and staff turnover [28].

2.2.1 Development of organisational commitment

[36] concept of commitment has been widely used by researchers studying organisational commitment. His concept is about that employees would like to continue to work in the same company until there is an opportunity of an exchange of value which would be lost if they resigned from the company. However, [37] commented that this type of commitment in terms of exchange of value is not about job satisfaction or career development but just reward to employees. The concept of [36] is known as a calculative approach to commitment. Contrary to this approach, [38] emphasized organisational commitment with attitudinal approach. Their model focuses on the employee’s role and their involvement in the company they are working. Their findings also concerned about the feelings of employees. More recent work by [39] argued that employees’ commitment to their company also concerned about their behavior towards other members of the company which relates to trust and group membership. Employees will have higher level of commitment to the company if they have a good relationship with their colleagues.

2.2.2 Western organisational commitment theories

[40] suggested that organisational commitment comprises three behavior and attitude factors. They contended that an employee’s decision to leave or stay with an organisation is based on the relationship between the employee and the organisation, which is determined by the employee’s psychological state and defined as normative commitment, continuance commitment, and affective commitment.

Normative commitment arises from agreements or sharing of norms that result in an employee’s sense of obligation to an organisation. Employees that have a strong normative commitment tend to stay with a firm because they feel obliged to [41]. Continuance commitment is an accumulation of interests within an organisation. This means that an employee bonds with an organisation because of additional interests such as seniority, concerns about family, and pensions, rather than positive feelings toward an employer [42]. The commitment represents the employee’s understanding of the opportunity costs related to staying or leaving an organisation; a strong commitment from employees means they stay with their employers because
they have to [41]. Affective commitment is an employee’s emotional adherence to the identification with, and involvement in, an organisation [32]. That is, employees are actively involved with employers by giving something of themselves in order to enhance the wellbeing of their employers [43]. Affective commitment includes three factors that connect an employee with an employer: a strong belief in, and commitment to, an organisation’s values and goals, a willingness to devote a great effort to an organisation, and a strong wish to retain membership of an organisation [43].

[44] suggested a model of commitment in terms of work attitudes which distinguishes normative and instrumental processes as behavioral determinants. He claimed that commitment could be defined as the internalized normative pressures of employees to act in a way that meets organisational interests. Employees’ identification inside an organization and their values of loyalty are the critical determinants of commitment. [45] suggested commitment consists of continuance, cohesion and control types. He claimed that cohesion commitment is the attachment of an employee’s fund of affectivity and emotion to their group.

**2.2.3 Wang’s (2004) organisational commitment model**

[46] suggested that communist ideals in China could influence organisational commitment, and that her model could be broadly compared with continuance commitment in Western research. Wang also stated the possibility of a phenomenon of organisational commitment that is unique to China, meaning that Western models may not be applicable in the Chinese context. [46] model is based on suggestions by [47] and comprises five components: value commitment, normative commitment, passive continuance commitment, active continuance commitment, and affective commitment.

In [46] model, affective commitment is used to measure emotional attachment and is the same as in [40]; however, sub-dimensions of passive and active commitment are included, as recommended by other researchers [28,48,49,50]. In [46] model, active continuance commitment suggests that an employee is actively motivated within the organisation because of the availability of promotion opportunities or work-related training, which encourages the employee to stay in his or her job. This contrasts with passive continuance commitment, which applies when employees stay with their employers because they are unable to find another job. Normative commitment implies that employees feel obligated to stay in their job; Value
commitment applies when employees share the values of the organisation and, as a result, demonstrate greater effort in their work to support their employers [46].

Prior to 1997, Hong Kong had been under British administration for almost 150 years, British business practices and colonial-style administration remained unchanged in Hong Kong before 1997 [51,52]; the traditional bureaucratic approach and focus on hierarchy ensured centralized control [52]. After the handover of Hong Kong to China in 1997, British rule ended, but Western culture was deeply rooted in Hong Kong. Although [53] found that the model of [46] has a better fitness to the organizational commitment behavior of ICT employees in Hong Kong, the [3] measurements for organisational commitment, which have been commonly used [54] in the West, were adapted for this study.

2.3 Job Satisfaction

[55] was one of the earliest researchers to define job satisfaction, describing it as an employee’s psychological and physical response to their work environment and the nature of their work. [56] defined job satisfaction as an employee’s negative or positive attitudes in relation to their employment. Other research indicated that the measure of employees’ involvement and identification with their organisation could identify job satisfaction [32] and that when an evaluation of the characteristics of a job creates positive feelings for an employee, this is defined as job satisfaction [57]. According to [58], job satisfaction is an affective or emotional response regarding different elements of work. However, other researchers asserted that job satisfaction is employees’ feelings, including pleasurable or positive emotional states, toward their jobs following performance appraisals [59,60,61,62,63]. [64] suggested that job satisfaction encompasses employees’ evaluative, cognitive, and affective reactions to their job, while [65] defined job satisfaction as the extent to which workers achieve a sense of fulfillment and feel gratified from their work. [66] identified the elements of employees’ expectations and characteristics of jobs and defined job satisfaction as the equity of various desired and non-desired work-related experiences. A final definition suggested that workers have a mixture of feelings and beliefs about their jobs and that job satisfaction can be measured as ranging from extreme satisfaction to extreme dissatisfaction [67].
2.4 Hypotheses Development

In order to gain a better understanding of the interplay between the constructs of the diagnostic use of PMS, the interactive use of PMS, organisational commitment, and job satisfaction, a set of hypotheses was developed to help address the proposed research questions.

2.4.1 Diagnostic use of PMS and organisational commitment

[24,68,69] asserted that organisational commitment is strongly related to the effective use of PMS, including the diagnostic use of PMS. It is expected that a similar causality may exist in Hong Kong’s ICT industry. Therefore, it was hypothesized that:

Hypothesis 1: The diagnostic use of PMS positively affects employees’ organisation commitment in Hong Kong’s ICT industry.

2.4.2 Interactive use of PMS and organisational commitment

[24,68,69] asserted that organisational commitment is strongly related to the effective use of PMS, including the interactive use of PMS. It is expected that a similar causality may exist in Hong Kong’s ICT industry. Therefore, it was hypothesized that:

Hypothesis 2: The interactive use of PMS positively affects employees’ organisation commitment in Hong Kong’s ICT industry.

2.4.3 Diagnostic use of PMS and job satisfaction

[24,68,69] asserted that the job satisfaction of employees is strongly related to the effective use of PMS, including the diagnostic use of PMS. It is expected that a similar causality may exist in Hong Kong’s ICT industry. Therefore, it was hypothesized that:

Hypothesis 3: The diagnostic use of PMS positively affects employees’ job satisfaction in Hong Kong’s ICT industry.

2.4.4 Interactive use of PMS and job satisfaction

[24,68,69] asserted that the job satisfaction of employees is strongly related to the effective use of PMS, including the interactive use of PMS. It is expected that a
similar causality may exist in Hong Kong’s ICT industry. Therefore, it was hypothesized that:

Hypothesis 4: The interactive use of PMS positively affects employees’ job satisfaction in Hong Kong’s ICT industry.

2.4.5 Organisation commitment and job satisfaction

Previous studies revealed a correlation between employee commitment and job satisfaction, such as the study of hospital nurses by [70], which argued that job satisfaction can predict organisational commitment. [71] found that job satisfaction can predict whether employees intend to leave an organisation, as well as their level of organisational commitment. Organisational commitment is strongly related to job satisfaction [72,73,74,75]. The absence of job satisfaction often leads to reduced organisational commitment [76] and increased staff turnover [77,78].

[79] revealed that organisational commitment was directly correlated with intent to leave and job satisfaction. The same research confirmed that organisational commitment predicts job satisfaction, but job satisfaction is unable to predict organisational commitment. These results differ from those of studies in the West. To gain a better understanding of the interplay between these two constructs, it was hypothesized that:

Hypothesis 5: Employees’ organisation commitment and job satisfaction are positively correlated in Hong Kong’s ICT industry.

2.5 Research Model

Based on the literature review, the following two research questions were posed:

1. What is the relationship between the use of PMS, organisational commitment, and job satisfaction in Hong Kong’s ICT sector?

2. What are the effects of different PMS (diagnostic and interactive) on organisational commitment and job satisfaction in Hong Kong’s ICT sector?

Based on the research questions and the hypotheses developed in relation to the concepts of diagnostic and interactive use of PMS, organisational commitment, and job satisfaction, five hypotheses were developed. Fig. 1 shows the research model of this study.
3. METHODOLOGY

3.1 Sample and Data Collection

The chosen population of this research was all the employees of all levels in Hong Kong’s ICT industry. Names and email addresses of ICT practitioners — the potential participants — were randomly selected from ICT-related public domains in Hong Kong. However, to enhance the quality of this research, a target sample size of 300 was set. In view of this target sample size and the anticipated low response rate in this kind of survey [80,81], 6,000 invitations by email were sent out to recruit research participants. Final 302 respondents were received and the response rate is 5.03%.

The data collection method for this research was an Internet-based, self-administered questionnaire to collect the perception of Hong Kong’s ICT practitioners on the levels of diagnostic and interactive use of PMS within their organisations and their levels of organisational commitment and job satisfaction. Six thousand invitation letters along with a participant information statement were sent directly via email to the mailboxes of the randomly selected potential participants who were invited to complete the questionnaire online and submitted their data to the database server. Finally 302 responses were collected. Potential participants were also advised that participation in this research was entirely voluntary and that they could withdraw from the survey at any time without giving a reason. As is common practice, the return of a completed questionnaire constituted implied consent to participate in the survey.

3.2 Research Instrument

The research instrument encompasses five sections. There were four constructs in this research, which included diagnostic use of PMS, interactive use of PMS, organisational commitment, and job satisfaction. The last section collected demographic data related to the respondents.
Fig. 1. Conceptual model of this research: Effects of PMS on organisational commitment and job satisfaction
The diagnostic use of PMS was the independent construct in this study. The four questionnaire items for the diagnostic use of PMS were adapted from [1]. Table 1 shows these measuring items, the question ID, and the questions relating to the diagnostic use of PMS.

### Table 1. Measuring items for diagnostic use of PMS

<table>
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<th>Question ID</th>
<th>Questionnaire items</th>
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<tr>
<td>A1-2</td>
<td>My senior management team involves me in the use of performance measurements to monitor results.</td>
</tr>
<tr>
<td>A1-3</td>
<td>My senior management team involves me in the use of performance measurements to compare outcomes to expectation.</td>
</tr>
<tr>
<td>A1-4</td>
<td>My senior management team involves me in the use of performance measurements to review key measurements.</td>
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</table>

The interactive use of PMS was the mediating construct in this study. Seven out of eight questionnaire items for the interactive use of PMS were adapted from [1], while the last item was adapted from [2]. This was because of its appropriateness in the circumstances. Table 2 shows these measuring items, the question ID, and the questions relating to the interactive use of PMS.

### Table 2. Measuring items for interactive use of PMS

<table>
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<th>Question ID</th>
<th>Questionnaire items</th>
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<tr>
<td>A2-5</td>
<td>My senior management team involves me in the use of performance measurements to enable discussion in meetings of superiors, subordinates, and peers.</td>
</tr>
<tr>
<td>A2-6</td>
<td>My senior management team involves me in the use of performance measurements to enable continual challenging and debating of underlying results, assumptions, and action plans.</td>
</tr>
<tr>
<td>A2-7</td>
<td>My senior management team involves me in the use of performance measurements to enable continual challenging and debating of underlying results, assumptions, and action plans.</td>
</tr>
<tr>
<td>A2-8</td>
<td>My senior management team involves me in the use of performance measurements to unite the organisation.</td>
</tr>
<tr>
<td>A2-9</td>
<td>My senior management team involves me in the use of performance measurements to enable the organisation to focus on common issues.</td>
</tr>
<tr>
<td>A2-10</td>
<td>My senior management team involves me in the use of performance measurements to enable the organisation to focus on critical success factors.</td>
</tr>
<tr>
<td>A2-11</td>
<td>My senior management team involves me in the use of performance measurements to develop a common vocabulary within the organisation.</td>
</tr>
<tr>
<td>A2-12</td>
<td>My senior management team involves me in the use of performance measurements to enable the organisation to focus on strategic uncertainties.</td>
</tr>
</tbody>
</table>

Organisational commitment was the dependent construct in this study. The [3] model is described by [82] as the most widely accepted definition of commitment to organisations and how this is measured. As such, the questionnaire items for
organisational commitment were adapted from [3]. Table 3 shows these measuring items, the question ID, and the questions relating to organisational commitment.

**Table 3. Measuring items for organisational commitment**

<table>
<thead>
<tr>
<th>Question ID</th>
<th>Questionnaire items</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1-13</td>
<td>This organisation holds a great deal of personal meaning for me.</td>
</tr>
<tr>
<td>B1-14</td>
<td>I owe a great deal to my organisation.</td>
</tr>
<tr>
<td>B1-15</td>
<td>I would feel guilty if I left my organisation now.</td>
</tr>
<tr>
<td>B1-16</td>
<td>I really feel as if this organisation’s problems are my own.</td>
</tr>
<tr>
<td>B1-17</td>
<td>I would be very happy to spend the rest of my career with this organisation.</td>
</tr>
<tr>
<td>B2-18</td>
<td>It would be very hard for me to leave my organisation right now, even if I wanted to.</td>
</tr>
<tr>
<td>B2-19</td>
<td>One of the few negative consequences of leaving this organisation would be the scarcity of other job opportunities.</td>
</tr>
<tr>
<td>B2-20</td>
<td>I would not leave my organisation right now because I have a sense of obligation to its people.</td>
</tr>
<tr>
<td>B2-21</td>
<td>Even if it were to my advantage, I do not feel it would be right to leave my organisation now.</td>
</tr>
<tr>
<td>B2-22</td>
<td>This organisation deserves my loyalty.</td>
</tr>
<tr>
<td>B3-23</td>
<td>I do not feel emotionally attached to this organisation.</td>
</tr>
<tr>
<td>B3-24</td>
<td>I do not feel like part of the family in my organisation.</td>
</tr>
<tr>
<td>B3-25</td>
<td>I do not feel a strong sense of belonging to my organisation.</td>
</tr>
<tr>
<td>B3-26</td>
<td>I do not feel any obligation to stay with my current employer.</td>
</tr>
<tr>
<td>B3-27</td>
<td>If I had not already put too much of myself into this organisation, I would leave.</td>
</tr>
</tbody>
</table>

Job satisfaction was the dependent construct in this study. The questionnaire items for job satisfaction, which comprised five dimensions of compensation, work, supervision, promotion, and co-workers, were adapted from [4]. Table 4 shows the measuring items, the question ID, and the job satisfaction questions.

The demographic data section collected information related to the respondents. This information included gender, age, marital status, monthly income, education level, work experience in the ICT industry, and information on their current employer.

### 3.3 Data Analysis

Collected data were analyzed by using Cronbach’s Alpha ( ) Reliability Test and the EFA Validity Test; AMOS was used to run CFA in order to confirm the reliability and validity of the measurements used in this study. Hypotheses relating to the relationships between the tested latent variables (i.e., interactive PMS, diagnostic PMS, organisational commitment, and job satisfaction) were analyzed using Structural Equation Model (SEM).
Table 4. Measuring items for job satisfaction

<table>
<thead>
<tr>
<th>Question ID</th>
<th>Questionnaire Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1-28</td>
<td>My benefit package.</td>
</tr>
<tr>
<td>C1-29</td>
<td>My most recent raise.</td>
</tr>
<tr>
<td>C1-30</td>
<td>Information about pay issues provided by the company.</td>
</tr>
<tr>
<td>C1-31</td>
<td>My current total salary package (base pay, benefits, and incentives).</td>
</tr>
<tr>
<td>C1-32</td>
<td>The company’s pay structure.</td>
</tr>
<tr>
<td>C1-33</td>
<td>How the company administers pay.</td>
</tr>
<tr>
<td>C2-34</td>
<td>The job requires me to use a number of complex or high-level skills.</td>
</tr>
<tr>
<td>C2-35</td>
<td>The job denies me any chance to use my personal initiative or judgment when working.</td>
</tr>
<tr>
<td>C2-36</td>
<td>The job is quite simple and repetitive.</td>
</tr>
<tr>
<td>C2-37</td>
<td>The job gives me considerable opportunity for independence and freedom in how I work.</td>
</tr>
<tr>
<td>C3-38</td>
<td>My supervisor looks for opportunities to praise positive employee performance, both in private and in front of others.</td>
</tr>
<tr>
<td>C3-39</td>
<td>I feel undervalued by my supervisor.</td>
</tr>
<tr>
<td>C3-40</td>
<td>The supervisor almost never gives me feedback about how well I have completed my work.</td>
</tr>
<tr>
<td>C3-41</td>
<td>My supervisor rewards a good idea by implementing it and giving credit to the responsible employee(s).</td>
</tr>
<tr>
<td>C3-42</td>
<td>My supervisor seldom recognizes an employee for work well done.</td>
</tr>
<tr>
<td>C3-43</td>
<td>My supervisors often let me know how well they think I am performing.</td>
</tr>
<tr>
<td>C4-44</td>
<td>My chances of being promoted are good.</td>
</tr>
<tr>
<td>C4-45</td>
<td>There are enough career opportunities for me in this organisation.</td>
</tr>
<tr>
<td>C4-46</td>
<td>Job vacancies in this organisation are usually filled by people from outside the organisation.</td>
</tr>
<tr>
<td>C4-47</td>
<td>It would be easy to find a job in another department.</td>
</tr>
</tbody>
</table>

4. FINDINGS

The data collected from the 302 respondents were checked using descriptive analyses, reliability test and structural equation modeling.

4.1 Sample Characteristics

Table 5 shows the distribution of respondents’ positions in their company whilst Table 6 shows the personal details of respondents.

4.2 Validity Test

Although all the measurement items are adapted from prior studies with higher validity and reliability, this research has conducted the validity and reliability test in order to ensure the same level of validity and reliability of the data collected. Exploratory factor analysis (EFA) was initially run to establish measurement assessment of latent variables. With these, EFA for PMS is as shown in Table 7. The table indicates that all but one item (“develop a common vocabulary in the organisation”) of interactive use of PMS loaded highly in Component 1 (C1) and was
named "interactive". All diagnostic use of PMS items loaded highly in Component 2 (C2) and was named "diagnostic". This demonstrates that the factor loading for these two components discriminates and converges in support of its theoretical underpinning.

Table 5. Respondents’ company details

<table>
<thead>
<tr>
<th>Position/Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner/CEO/Admin/Marketing/HR Director</td>
<td>80</td>
<td>26.5</td>
</tr>
<tr>
<td>General/Technical/IT/QC Manager</td>
<td>48</td>
<td>15.9</td>
</tr>
<tr>
<td>Executive/Supervisor</td>
<td>77</td>
<td>25.5</td>
</tr>
<tr>
<td>Technician/Clerical</td>
<td>97</td>
<td>32.1</td>
</tr>
<tr>
<td>Nature of business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>156</td>
<td>51.7</td>
</tr>
<tr>
<td>Trading and Service</td>
<td>81</td>
<td>26.8</td>
</tr>
<tr>
<td>Wholesale and Retail</td>
<td>35</td>
<td>11.6</td>
</tr>
<tr>
<td>Banking Institutes</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Construction/Engineering</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Government sector</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Education/Training Institute</td>
<td>6</td>
<td>2.0</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>15</td>
<td>5.0</td>
</tr>
<tr>
<td>No. of employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 or fewer</td>
<td>42</td>
<td>13.9</td>
</tr>
<tr>
<td>11 to 50</td>
<td>48</td>
<td>15.9</td>
</tr>
<tr>
<td>51 to 100</td>
<td>59</td>
<td>19.5</td>
</tr>
<tr>
<td>101 to 200</td>
<td>50</td>
<td>16.6</td>
</tr>
<tr>
<td>over 200</td>
<td>103</td>
<td>34.1</td>
</tr>
<tr>
<td>Years of experience in ICT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 or fewer</td>
<td>101</td>
<td>33.4</td>
</tr>
<tr>
<td>3 to 5</td>
<td>95</td>
<td>31.5</td>
</tr>
<tr>
<td>6 to 10</td>
<td>60</td>
<td>19.9</td>
</tr>
<tr>
<td>11 to 20</td>
<td>32</td>
<td>10.6</td>
</tr>
<tr>
<td>more than 20</td>
<td>13</td>
<td>4.3</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Years of working experience in current company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 or fewer</td>
<td>133</td>
<td>44.2</td>
</tr>
<tr>
<td>3 to 5</td>
<td>91</td>
<td>30.2</td>
</tr>
<tr>
<td>6 to 10</td>
<td>53</td>
<td>17.6</td>
</tr>
<tr>
<td>11 to 20</td>
<td>18</td>
<td>6.0</td>
</tr>
<tr>
<td>more than 20</td>
<td>6</td>
<td>2.0</td>
</tr>
</tbody>
</table>

EFA for organisational commitment, as shown in Table 8, indicates that when two items from 15 items are removed, organisational commitment items load highly into the three distinctive components of continuance, affective and normative, thus converging and discriminating, as indicated in theory.

Table 9 shows the rotated component matrix, where the 25 items that loaded highly into five distinctive components, compensation (C1), co-workers (C2), supervision (C3), promotion (C4), work (C5), are distinct. These five components explain a total of 73.80 percent variance in the items, whereby C1 explains 43.44
percent, C2 explains 16.19 percent, C3 explains 5.85 percent, C4 explains 4.72 percent, and C5 explains 3.60 percent.

Table 6. Respondent profile

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>161</td>
<td>53.5</td>
</tr>
<tr>
<td>Male</td>
<td>140</td>
<td>46.5</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>66</td>
<td>21.9</td>
</tr>
<tr>
<td>25–34</td>
<td>164</td>
<td>54.5</td>
</tr>
<tr>
<td>35–44</td>
<td>52</td>
<td>17.3</td>
</tr>
<tr>
<td>45–54</td>
<td>12</td>
<td>4.0</td>
</tr>
<tr>
<td>55 and above</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>172</td>
<td>57.0</td>
</tr>
<tr>
<td>Married</td>
<td>130</td>
<td>43.0</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary/High school</td>
<td>35</td>
<td>11.7</td>
</tr>
<tr>
<td>Associate degree/Higher diploma</td>
<td>59</td>
<td>19.7</td>
</tr>
<tr>
<td>Bachelor/Professional degree</td>
<td>167</td>
<td>55.7</td>
</tr>
<tr>
<td>Master degree</td>
<td>33</td>
<td>11.0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>6</td>
<td>2.0</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Monthly income level (HK$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $8,000</td>
<td>91</td>
<td>30.1</td>
</tr>
<tr>
<td>$8,000 to $15,000</td>
<td>89</td>
<td>29.5</td>
</tr>
<tr>
<td>$15,001 to $28,000</td>
<td>62</td>
<td>20.5</td>
</tr>
<tr>
<td>$28,001 to $38,000</td>
<td>23</td>
<td>7.6</td>
</tr>
<tr>
<td>$38,001 to $50,000</td>
<td>15</td>
<td>5.0</td>
</tr>
<tr>
<td>More than $50,000</td>
<td>22</td>
<td>7.3</td>
</tr>
<tr>
<td>Total</td>
<td>302</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3 Reliability Tests

The reliability of all constructs shows Cronbach’s as being above 0.7, showing high reliability (Table 10).

4.4 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was used to verify the measurement assessment performed above. As such, measurement models of latent variables were drawn and confirmed from the findings.
Confirmatory factor analysis (CFA) was used to verify the measurement models of latent variables. The reliability of all constructs shows Cronbach’s \( \alpha \) as being above 0.7, showing the models are reliable. 4.3 Reliability Tests

Table 7. Rotated component matrix

<table>
<thead>
<tr>
<th>Items for PMS</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tie the organisation together</td>
<td>Interactive</td>
</tr>
<tr>
<td>Provide a common view of the organisation</td>
<td>Diagnostic</td>
</tr>
<tr>
<td>Enable the organisation to focus on common issues</td>
<td></td>
</tr>
<tr>
<td>Enable continual challenge and debate underlying results, assumptions, and action plans</td>
<td></td>
</tr>
<tr>
<td>Enable the organisation to focus on strategic uncertainties</td>
<td></td>
</tr>
<tr>
<td>Enable discussion in meetings of superiors, subordinates, and peers</td>
<td></td>
</tr>
<tr>
<td>Enable the organisation to focus on critical success factors</td>
<td></td>
</tr>
<tr>
<td>Track progress toward goals</td>
<td>0.811</td>
</tr>
<tr>
<td>Monitor results</td>
<td>0.807</td>
</tr>
<tr>
<td>Compare outcomes to expectation</td>
<td>0.792</td>
</tr>
<tr>
<td>Review key measures</td>
<td>0.771</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 8

<table>
<thead>
<tr>
<th>Items for organisational commitment</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not feel a strong sense of belonging to my organisation.</td>
<td>Continuance</td>
</tr>
<tr>
<td>I do not feel like part of the family at my organisation.</td>
<td>Affective</td>
</tr>
<tr>
<td>I do not feel emotionally attached to this organisation.</td>
<td>Normative</td>
</tr>
<tr>
<td>I do not feel any obligation to remain with my current employer.</td>
<td></td>
</tr>
<tr>
<td>If I had not already put too much of myself into this organisation, I would leave.</td>
<td></td>
</tr>
<tr>
<td>This organisation has a great deal of personal meaning for me.</td>
<td>0.869</td>
</tr>
<tr>
<td>I owe a great deal to my organisation.</td>
<td>0.840</td>
</tr>
<tr>
<td>I really feel as if this organisation’s problems are my own.</td>
<td>0.798</td>
</tr>
<tr>
<td>It would be very hard for me to leave my organisation right now, even if I wanted to.</td>
<td>0.752</td>
</tr>
<tr>
<td>This organisation deserves my loyalty.</td>
<td>0.751</td>
</tr>
<tr>
<td>Even if it were to my advantage, I do not feel it would be right to leave my organisation now.</td>
<td>0.815</td>
</tr>
<tr>
<td>I would feel guilty if I left my organisation now.</td>
<td>0.796</td>
</tr>
<tr>
<td>I would be very happy to spend the rest of my career with this organisation.</td>
<td>0.641</td>
</tr>
</tbody>
</table>

Table 11 indicates that CMIN = 114.85, df = 43, p-value = 0.0001, showing that the CFA for PMS model does not quite fit. However, CIM/DF = 2.7 < 3 indicates the model fit [83,84]. The results GFI = 0.90, AGFI = 0.90, and CFI = 0.90 all show that the model is acceptable. The result RMSEA = 0.0075 shows a value < 0.08; hence, the model is deemed acceptable and supported by PCLOSE = 0.0007 (PCLOSE < 0.05).
Job satisfaction was measured using five components and a total of 35 items.

### Table 9

<table>
<thead>
<tr>
<th>Items for job satisfaction</th>
<th>Compensation</th>
<th>Co-workers</th>
<th>Supervision</th>
<th>Promotion</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>My current total salary package (base pay, benefits, and incentives)</td>
<td>0.823</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The number of benefits I receive</td>
<td></td>
<td>0.790</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of my current financial incentive</td>
<td></td>
<td></td>
<td>0.789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The competitiveness of my total salary package (base pay, benefits, and incentives)</td>
<td></td>
<td></td>
<td>0.788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The company’s pay structure</td>
<td></td>
<td></td>
<td>0.777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How the company administers pay</td>
<td></td>
<td></td>
<td>0.771</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The information about pay issues provided by the company</td>
<td></td>
<td></td>
<td>0.770</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My benefit package</td>
<td></td>
<td></td>
<td>0.770</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency of the company’s pay policies</td>
<td></td>
<td></td>
<td>0.756</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How my raises are determined</td>
<td></td>
<td></td>
<td>0.747</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My most recent raise</td>
<td></td>
<td></td>
<td>0.742</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The value of my benefits</td>
<td></td>
<td></td>
<td>0.718</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are friendly</td>
<td></td>
<td>0.916</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are honest</td>
<td></td>
<td>0.912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are dynamic</td>
<td></td>
<td>0.880</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are intelligent</td>
<td></td>
<td>0.878</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are not enemies</td>
<td></td>
<td>0.866</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-workers are hardworking</td>
<td></td>
<td>0.853</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My supervisor praises employee performance, both privately and in front of others.</td>
<td></td>
<td></td>
<td></td>
<td>0.741</td>
<td></td>
</tr>
<tr>
<td>My supervisor often lets me know how well he or she thinks I am performing in the job.</td>
<td></td>
<td></td>
<td></td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td>My supervisor rewards a good idea by implementing it and giving the responsible employee(s) credit.</td>
<td></td>
<td></td>
<td></td>
<td>0.721</td>
<td></td>
</tr>
<tr>
<td>There are enough career opportunities for me in this organisation.</td>
<td></td>
<td></td>
<td></td>
<td>0.793</td>
<td></td>
</tr>
<tr>
<td>My chances for being promoted are good.</td>
<td></td>
<td></td>
<td></td>
<td>0.783</td>
<td></td>
</tr>
<tr>
<td>The job is quite simple and repetitive.</td>
<td></td>
<td></td>
<td></td>
<td>0.803</td>
<td></td>
</tr>
<tr>
<td>The job denies me any chance to use my personal initiative or judgment in carrying out the work.</td>
<td></td>
<td></td>
<td></td>
<td>0.791</td>
<td></td>
</tr>
</tbody>
</table>
One item was removed as it loaded weakly in the interactive measurement, and the final measurement model items are tabled in Table 12. This further confirms that the items representing diagnostic and interactive use of PMS load distinctively into two columns.

### Table 10. Reliability

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No. of items</th>
<th>Cronbach’s</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>4</td>
<td>0.95</td>
<td>10.77</td>
<td>4.13</td>
</tr>
<tr>
<td>Interactive</td>
<td>7</td>
<td>0.94</td>
<td>18.65</td>
<td>6.19</td>
</tr>
<tr>
<td>Affective Commitment</td>
<td>5</td>
<td>0.84</td>
<td>13.79</td>
<td>3.75</td>
</tr>
<tr>
<td>Normative Commitment</td>
<td>3</td>
<td>0.70</td>
<td>14.58</td>
<td>3.37</td>
</tr>
<tr>
<td>Continuance Commitment</td>
<td>5</td>
<td>0.91</td>
<td>13.62</td>
<td>3.83</td>
</tr>
<tr>
<td>Compensation</td>
<td>12</td>
<td>0.95</td>
<td>34.38</td>
<td>8.01</td>
</tr>
<tr>
<td>Work</td>
<td>2</td>
<td>0.70</td>
<td>5.56</td>
<td>1.61</td>
</tr>
<tr>
<td>Supervision</td>
<td>3</td>
<td>0.80</td>
<td>8.26</td>
<td>2.26</td>
</tr>
<tr>
<td>Promotion</td>
<td>2</td>
<td>0.81</td>
<td>5.81</td>
<td>1.60</td>
</tr>
<tr>
<td>Co-workers</td>
<td>6</td>
<td>0.97</td>
<td>15.98</td>
<td>6.14</td>
</tr>
</tbody>
</table>

### Table 11. Summary of model fit for measurement model—PMS

<table>
<thead>
<tr>
<th></th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CIM/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>114.85</td>
<td>43</td>
<td>0.0001</td>
<td>2.67</td>
<td>.93</td>
<td>.90</td>
<td>.98</td>
<td>.08</td>
<td>.007</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>0</td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indepedence model</td>
<td>3194.95</td>
<td>55</td>
<td>0.0001</td>
<td>58.09</td>
<td>.179</td>
<td>.014</td>
<td>.000</td>
<td>.438</td>
<td>.000</td>
</tr>
</tbody>
</table>

#### 4.4.1 CFA for job satisfaction

Job satisfaction was measured using five components and a total of 35 items. The final CFA measurement model corroborates with EFA, with a model including 24 items loading into distinctive components.

Table 13 indicates that CMIN = 2864.23, df = 252, p-value = 0.0001, showing that the final measurement model of job satisfaction does not quite fit. This is supported by the result CIM/DF = 11.34, which is > 3, indicating the lack of model fit [83, 84]. The results GFI = 0.42, AGFI = 0.32, and CFI = 0.56 all show the unacceptable model. RMSEA = 0.19 shows a value > 0.08; hence, the model is deemed not acceptable. Eleven items were removed as they were loading weakly in the job satisfaction measurement, and the final measurement model items are shown in Table 14, where all critical ratio (CR) values show > 1.96 [83, 84]. This further confirms that the items representing job satisfaction are valid and reliable.
Table 12. Standardized total effects for default model

<table>
<thead>
<tr>
<th>PMS Items</th>
<th>Interactive</th>
<th>Diagnostic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tie the organisation together</td>
<td>0.883</td>
<td>0.000</td>
</tr>
<tr>
<td>Enable the organisation to focus on common issues</td>
<td>0.856</td>
<td>0.000</td>
</tr>
<tr>
<td>Provide a common view of the organisation</td>
<td>0.843</td>
<td>0.000</td>
</tr>
<tr>
<td>Enable continual challenge and debate underlying results, assumptions, and action plans</td>
<td>0.829</td>
<td>0.000</td>
</tr>
<tr>
<td>Enable discussion in meetings of superiors, subordinates, and peers</td>
<td>0.819</td>
<td>0.000</td>
</tr>
<tr>
<td>Enable the organisation to focus on critical success factors</td>
<td>0.799</td>
<td>0.000</td>
</tr>
<tr>
<td>Enable the organisation to focus on strategic uncertainties</td>
<td>0.787</td>
<td>0.000</td>
</tr>
<tr>
<td>Compare outcomes to expectation</td>
<td>0.000</td>
<td>0.920</td>
</tr>
<tr>
<td>Review key measures</td>
<td>0.000</td>
<td>0.899</td>
</tr>
<tr>
<td>Track progress toward goals</td>
<td>0.000</td>
<td>0.899</td>
</tr>
<tr>
<td>Monitor results</td>
<td>0.000</td>
<td>0.898</td>
</tr>
</tbody>
</table>

4.4.2 CFA for organisational commitment

Organisational commitment was measured using three components and 15 items. The final CFA indicates three distinct components with 13 items.

Table 13. Summary of model fit for measurement model—job satisfaction

<table>
<thead>
<tr>
<th>Model</th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CMIN/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>2864.23</td>
<td>252</td>
<td>.000</td>
<td>11.37</td>
<td>.425</td>
<td>.316</td>
<td>.563</td>
<td>.19</td>
<td>.000</td>
</tr>
<tr>
<td>Saturated model</td>
<td>0.000</td>
<td>0</td>
<td>.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>.971</td>
<td>.971</td>
<td>.971</td>
</tr>
<tr>
<td>Independence model</td>
<td>6250.47</td>
<td>276</td>
<td>.000</td>
<td>22.65</td>
<td>.172</td>
<td>.100</td>
<td>.000</td>
<td>.27</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 15 indicates that CMIN = 745.25, df = 65, p-value = 0.0001, showing that the final measurement model of organisational commitment does not quite fit. This is supported by the result CMIN/DF = 11.47, which is > 3, indicating the lack of model fit [83,84]. The results GFI = 0.42, AGFI = 0.35, and CFI = 0.72 all show the unacceptable model. The result RMSEA = 0.19 shows a value > 0.08; hence, the model is deemed not acceptable. Two items were removed as they loaded weakly in the organisational commitment measurement, and the final measurement model items are shown in Table 16, where all CR values show >1.96 [83,84]. This further confirms that the items representing organisational commitment are valid and reliable.
Table 16: Summary of model fit for measurement model—organisational commitment

<table>
<thead>
<tr>
<th>Estimate</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1a &lt;--- J</td>
<td>1.000</td>
</tr>
<tr>
<td>C1b &lt;--- J</td>
<td>.893</td>
</tr>
<tr>
<td>C1c &lt;--- J</td>
<td>.877</td>
</tr>
<tr>
<td>C1d &lt;--- J</td>
<td>1.070</td>
</tr>
<tr>
<td>C1e &lt;--- J</td>
<td>.924</td>
</tr>
<tr>
<td>C1f &lt;--- J</td>
<td>.983</td>
</tr>
<tr>
<td>C1g &lt;--- J</td>
<td>.966</td>
</tr>
<tr>
<td>C1h &lt;--- J</td>
<td>.957</td>
</tr>
<tr>
<td>C1i &lt;--- J</td>
<td>.870</td>
</tr>
<tr>
<td>C1j &lt;--- J</td>
<td>.974</td>
</tr>
<tr>
<td>C1k &lt;--- J</td>
<td>.152</td>
</tr>
<tr>
<td>C1l &lt;--- J</td>
<td>.702</td>
</tr>
<tr>
<td>C1m &lt;--- J</td>
<td>.804</td>
</tr>
<tr>
<td>C1n &lt;--- J</td>
<td>.618</td>
</tr>
<tr>
<td>C1o &lt;--- J</td>
<td>.659</td>
</tr>
<tr>
<td>C1p &lt;--- J</td>
<td>.686</td>
</tr>
<tr>
<td>C1q &lt;--- J</td>
<td>.921</td>
</tr>
<tr>
<td>C1r &lt;--- J</td>
<td>.856</td>
</tr>
<tr>
<td>C1s &lt;--- J</td>
<td>1.057</td>
</tr>
<tr>
<td>C1t &lt;--- J</td>
<td>.813</td>
</tr>
<tr>
<td>C1u &lt;--- J</td>
<td>.853</td>
</tr>
<tr>
<td>C1v &lt;--- J</td>
<td>.790</td>
</tr>
<tr>
<td>C1w &lt;--- J</td>
<td>.971</td>
</tr>
</tbody>
</table>

4.4.3 CFA for endogenous variable (Job satisfaction—Organisational commitment)

Theoretically, the endogenous variables of job satisfaction and organisational commitment are correlated. Hence, these were further tested for correlation using CFA.

Table 17 indicates the model fit of the correlated job satisfaction and organisational commitment measurement model. The results CMIN = 4237.46, df = 628, p-value = 0.0001 show that the final measurement model of job satisfaction and organisational commitment does not quite fit. This is supported by CIM/DF = 6.75, which is > 3, indicating the lack of model fit [83,84]. The results GFI = 0.66, AGFI = 0.52, and CFI = 0.59 all show the unacceptable model. The results RMSEA = 0.14 show a value > 0.08; hence, the model is deemed not acceptable. However, as this is a measurement model, the CR value in regression weights (Table 19) shows > 1.96 [83,84]. This further confirms that the items representing job satisfaction and organisational commitment are valid and reliable and are correlated (r = 0.71), as indicated in Table 18 below.
Table 15. Summary of model fit for measurement model—organisational commitment

<table>
<thead>
<tr>
<th>Model</th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CMIN/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>745.25</td>
<td>65</td>
<td>.000</td>
<td>11.47</td>
<td>.415</td>
<td>.346</td>
<td>.719</td>
<td>.187</td>
<td>.000</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>0</td>
<td></td>
<td>1.000</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind. model</td>
<td>2496.59</td>
<td>78</td>
<td>.000</td>
<td>32.008</td>
<td>.141</td>
<td>.093</td>
<td>.000</td>
<td>.323</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 16. Regression weights—default model for organisational commitment

| B3e2    | <--- | O       | 1.000 |
| B3d2    | <--- | O       | .912  | .072  | 12.738 | ***  | par_1 |
| B3c2    | <--- | O       | .930  | .073  | 12.783 | ***  | par_2 |
| B3b2    | <--- | O       | .890  | .069  | 12.905 | ***  | par_3 |
| B3a2    | <--- | O       | .912  | .067  | 13.525 | ***  | par_4 |
| B2e     | <--- | O       | 1.040 | .077  | 13.588 | ***  | par_5 |
| B2d     | <--- | O       | .580  | .079  | 7.326  | ***  | par_6 |
| B2a     | <--- | O       | .702  | .082  | 8.599  | ***  | par_7 |
| B1e     | <--- | O       | .745  | .081  | 9.216  | ***  | par_8 |
| B1d     | <--- | O       | .836  | .074  | 11.276 | ***  | par_9 |
| B1c     | <--- | O       | .656  | .076  | 8.693  | ***  | par_10|
| B1b     | <--- | O       | 1.017 | .079  | 12.812 | ***  | par_11|
| B1a     | <--- | O       | 1.057 | .080  | 13.223 | ***  | par_12|

Table 17. Summary of model fit for measurement model—organisational commitment

<table>
<thead>
<tr>
<th>Model</th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CMIN/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>4237.46</td>
<td>628</td>
<td>.000</td>
<td>6.748</td>
<td>.655</td>
<td>.517</td>
<td>.594</td>
<td>.139</td>
<td>.000</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>0</td>
<td></td>
<td>1.000</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ind. model</td>
<td>9545.53</td>
<td>666</td>
<td>.000</td>
<td>14.333</td>
<td>.270</td>
<td>.148</td>
<td>.000</td>
<td>.212</td>
<td>.000</td>
</tr>
</tbody>
</table>

The above EFA and CFA tests confirm the validity and reliability of the data, so the data is deemed suitable for significance tests.

4.5 Significance Tests

The postulated hypotheses were tested using an SEM. The data collected were tested for normality and homogeneity of variances, as test assumptions require the data to meet these assumptions. The model postulated for latent variables relating to Hypotheses 1 to 5 is shown in Figure 2 below.

Table 18. Covariance and correlations—default model

<table>
<thead>
<tr>
<th>Covariances</th>
<th>Estimate</th>
<th>SE</th>
<th>CR</th>
<th>P</th>
<th>Label</th>
<th>Correlation Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>O &lt;-&gt; J</td>
<td>.328</td>
<td>.041</td>
<td>8.014</td>
<td>***</td>
<td>par_36</td>
<td>.708</td>
</tr>
</tbody>
</table>
The above EFA and CFA tests confirm the validity and reliability of the data, and the data is deemed suitable for significance tests. The model postulated for latent variables were tested for normality and homogeneity of variances, as these assumptions require.

4.5 Significance Tests

The postulated hypotheses were tested using an SEM. The data collected was observed.

4.5.1 Multivariate normal distribution

This assumption is important because violation of this assumption can inflate or deflate Chi-square value, which determines model fit. However, as this study does not aim to find a fit model but to test theories, the normality assessment presented in Table 20 is observed.

Table 20. Assessment of normality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Skew</th>
<th>CR</th>
<th>Kurtosis</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2 Interactive</td>
<td>7.00</td>
<td>34.00</td>
<td>.339</td>
<td>2.392</td>
<td>-.630</td>
<td>-2.224</td>
</tr>
<tr>
<td>A1 Diagnostic</td>
<td>4.00</td>
<td>20.00</td>
<td>.461</td>
<td>3.256</td>
<td>-.543</td>
<td>-1.916</td>
</tr>
<tr>
<td>OC</td>
<td>3.00</td>
<td>64.00</td>
<td>-.140</td>
<td>-.989</td>
<td>.141</td>
<td>.497</td>
</tr>
<tr>
<td>JS</td>
<td>5.00</td>
<td>08.00</td>
<td>.129</td>
<td>.913</td>
<td>-.139</td>
<td>-.491</td>
</tr>
<tr>
<td>Multivariate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.520</td>
<td>3.394</td>
</tr>
</tbody>
</table>
The data is deemed suitable for significance tests. The data collected to meet these assumptions. The model postulated for latent variables was tested using an SEM. The research findings indicate positive relationships. Table 18 and Table 21 indicate a strong standardized estimates. Moreover, the covariances (i.e., relationship between job satisfaction and organisational commitment) are positive, indicating positive relationships. The literature review revealed that there has been no previous study addressing the different use of PMS and its effect on individual employee ICT practitioners. The research findings give implications to decision makers in Hong Kong as well as to ICT practitioners and organisations. The research findings have important implications for policy formulation, strategic planning of PMS within their organisations. This planning will ultimately lead to increased job satisfaction.
Table 21. Regression weights (Group 1—Default model)

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Estimate</th>
<th>SE</th>
<th>CR</th>
<th>P</th>
<th>STD estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS&lt;--A1 Diagnostic</td>
<td>.885</td>
<td>.144</td>
<td>6.152</td>
<td>***</td>
<td>.280</td>
</tr>
<tr>
<td>JS&lt;--A2 Interactive</td>
<td>1.166</td>
<td>.096</td>
<td>12.155</td>
<td>***</td>
<td>.553</td>
</tr>
<tr>
<td>OC&lt;--A1 Diagnostic</td>
<td>.522</td>
<td>.100</td>
<td>5.237</td>
<td>***</td>
<td>.268</td>
</tr>
<tr>
<td>OC&lt;--A2 Interactive</td>
<td>.504</td>
<td>.066</td>
<td>7.581</td>
<td>***</td>
<td>.387</td>
</tr>
<tr>
<td>Co-variances</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resid1 &lt;-- Resid2</td>
<td>37.446</td>
<td>4.729</td>
<td>7.919</td>
<td>***</td>
<td></td>
</tr>
</tbody>
</table>

| Variances         |          |     |      |      |               |
| A1 Diagnostic     | 16.972   | 1.390| 12.207| *** |               |
| A2 Interactive    | 38.175   | 3.127| 12.207| *** |               |
| Resid1            | 104.646  | 8.573| 12.207| *** |               |
| Resid2            | 50.278   | 4.119| 12.207| *** |               |

The CR for multivariate skewness (CR = 2.52) falls within ± 2.5, indicating normality, while CR for multivariate kurtosis (CR = 3.4) falls within ± 5, which indicates normality [84].

With the normality assumption met, the regression weights in Table 21 indicate that all relationships are significant (C.R > 1.96; P = *** or P < 0.05), with strong standardized estimates. Moreover, the co-variances (i.e., relationship between job satisfaction and organisational commitment) are also significant (C.R = 7.92, p <0.05). This shows that Hypotheses 1 to 4 are supported, as all standard estimate values are positive, indicating positive relationships. Table 18 and Table 21 indicate a strong positive correlation (r = 0.701) between job satisfaction and organisational commitment and strong positive relationships between the residuals of job satisfaction and organisational commitment, respectively; hence, Hypothesis 5 is supported.

5. DISCUSSION

The accelerating development of ICT technology has caused a rapid expansion in Hong Kong’s ICT industry and a simultaneous increase in demand for ICT practitioners. The literature review revealed that there has been no previous study addressing the different use of PMS and its effect on individual employee behavior [1,2,8,9,10]. This research sought to fill the gap by examining the effects of diagnostic and interactive use of PMS on organisational commitment and job satisfaction. The research findings give implications to decision makers in Hong Kong’s ICT sector by providing in-depth knowledge on how organisational commitment and job satisfaction of ICT practitioners can be enhanced through strategic planning of PMS within their organisations. This planning will ultimately lead
to the retention of valuable employees and lower staff turnover. The aim of this research was to uncover the effects of the diagnostic use of PMS on organisational commitment, the interactive use of PMS on organisational commitment, the diagnostic use of PMS on job satisfaction, the interactive use of PMS on job satisfaction, and the correlations between organisational commitment and job satisfaction in the ICT industry in Hong Kong.

In addressing the five hypotheses, it is clear that Hypotheses 1 and 2 indicate that there is a positive relationship between diagnostic and interactive use of PMS and organisational commitment. Similarly, this positive relationship is significantly seen between the diagnostic and interactive use of PMS and job satisfaction, as postulated in Hypotheses 3 and 4. Thus, contrary to arguments between Chinese scholars, the competitive ICT industry seems to show applicability of a model developed in the Western setting [46,47]. This relationship further strengthens the notion that both the diagnostic and interactive measures of PMS provide an organisation with a better view of its performance. These findings further support the use of interactive measures as part of a PMS. This integration with diagnostic measures strengthens the evaluation of the organisation’s performance.

In a competitive environment such as the ICT industry, diagnostic measures alone may not suffice, as this industry is advancing at a fast pace. Therefore employees need to be on their toes and keep abreast with changes. Moreover, with a massive movement of human capital around the globe, especially in the ICT sector, organisations tend to lose their intellectual capital to higher bidders. As advocated by [1], diagnostic measures may dampen innovativeness among employees when, in this industry, innovation is a necessity to achieve a competitive edge, setting a difference in terms of company performance. The positive relationship between PMS measures and organisational commitment could be because of the ICT industry employees who are bound by all three types of commitment: normative, continuance, and affective.

As organisational commitment and job satisfaction were proven to be highly positive in relationship, job satisfaction of employees will lead to their commitment to the organisation and may transcend to their organisational citizenship behavior. In the ICT industry, which may be lacking in terms of emotional effect and soft skills, maintaining employees with high technical ability is important, as committed, efficient ICT employees are difficult and costly to recruit [85].
Organisations performing different types of jobs, such as manufacturing or servicing, tend to provide different types of experience to their employees. In relation to the nature of organisations, different organisations pose different challenges and provide employees with different work-related skills, as well as knowledge of a variety of processes and procedures unique to that industry. As such, employees’ experience gained from work characteristics may determine an employee’s commitment to the organisation [35, 49, 86, 87, 88].

6. LIMITATIONS AND FUTURE RESEARCH

While this research contributes to human resource knowledge related to organisational commitment and job satisfaction, it has been conducted with limitations because of various reasons, including but not limited to time and resource constraints. Firstly, this study was conducted under a cross-sectional design with weak internal validity because of time and resource constraints, a longitudinal research study that collects data on the same construct over time will enable researchers to uncover possible trends of the underlying variables [89]. Secondly, a quantitative approach was used in this study, however, it did not identify other possible antecedents that may affect the relationships between the constructs under investigation. Further research on the same topic comprising both quantitative and qualitative approaches is recommended. Thirdly, an online anonymous questionnaire was conducted to collect the research data for this investigation because of the extreme time and resource limitations, however, considering that this is the sole data collection method used in the study and despite the fact that every precautionary measure has been put in place, common method bias and variance may exist. This suggested action will certainly help to enrich research findings, identify factors and reasons behind this study’s results, and further enhance the quality of the relevant research. Fourth, all data in this research were collected from Hong Kong’s ICT practitioners and represent the perceptions of this particular group of people. This specific geographical, cultural, and industrial setting may limit the generalizability of the research findings. Therefore, it is recommended that further research be conducted under different geographical, cultural, and industrial settings to strengthen the generalizability of this research’s results.
7. CONCLUSION

The rapid development of ICT technology has caused an unprecedented expansion in Hong Kong’s ICT industry and a simultaneous increase in demand for ICT practitioners. To help managers and owners in this setting retain valuable employees, this research set out to determine whether the use of diagnostic and interactive PMS in ICT organisations would enhance job satisfaction and organisational commitment. Through an extensive and critical review of relevant literature, the research identified two research questions and developed five hypotheses. The research’s five hypotheses were supported, indicating that diagnostic and interactive use of PMS positively influences job satisfaction and organisational commitment of employees, and that job satisfaction and organisational commitment are correlated to each other. The outcome of this research provides insights for managers and owners in Hong Kong’s ICT that will help with formulating appropriate strategies to reduce staff turnover and retain valuable staff. The findings indicate how both organisational commitment and job satisfaction can be enhanced through the appropriate use of PMS in Hong Kong’s ICT sector.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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The Influences of Corporate Social Responsibility to Customer Repurchases Intentions, Customer Word-of-Mouth Intentions and Customer Perceived Food Quality of Fast-Food Restaurants in Hong Kong and the Mediating Effects of Corporate Reputation

ABSTRACT

Aims: Market studies indicate that Hong Kong consumers are affluent and generally live a trendy, refined lifestyle. As such, besides traditional food markets, Hong Kong’s free market economy has spawned various forms of food retailers, such as supermarkets, fast food chains and fine dining restaurants, that contribute tremendously to its economy. In the face of fierce competition, companies in the food retail service industry are moving to differentiate themselves by embracing non-traditional, contemporary means of demarcation. One such means is by adopting corporate social responsibility (CSR) as a strategy for evoking positive customer behaviour towards the service. However, there is a dearth of research on CSR’s contribution to corporate reputation and its direct relationship with service industry eminent marketing concepts. This research investigated the role of CSR in building a better brand through corporate reputation and its effects on word of mouth intentions, repurchase intentions and customer positively perceived food quality in Hong Kong’s fast food industry.

Study Design: The research adopted a positivism paradigm and quantitative cross sectional approach.

Place and Duration of Study: The study was taken in Hong Kong between 2012 and 2013 of fast food restaurant patrons.

Methodology: Five constructs were adopted from previous studies to identify the relationships between various antecedents and to test ten hypotheses. Data were collected from 384 fast food restaurant patrons in Hong Kong.
Results: CSR is found to be directly related to corporate reputation, which is considered to be an important tool for business sustainability. Furthermore, the research revealed the partial mediating effects of corporate reputation on the relationship between CSR and customer behaviour and intentions. CSR provides a competitive advantage to fast food businesses as it plays a huge role in inducing positive word of mouth, repeat purchases, and positively perceived food quality.

Conclusion: The research has raised issues concerning the importance of CSR in changing customer behaviour and the pertinent partial mediating role played by corporate reputation in influencing CSR’s impact on customer behaviour and intentions. Findings from the research provide marketing information concerning CSR initiatives as well as verifying CSR-related theories, corporate reputation and marketing concepts. As service is known to vary according to the context in which it is offered, it is best for retail managers to identify CSR activities that best reflect their particular product or service. This will make it easier for customers to comprehend and evaluate, which will ultimately benefit Hong Kong’s fast food industry as a whole.

Keywords: corporate social responsibility; customer repurchases; customer word-of-mouth; food quality; Hong Kong.

1. INTRODUCTION

Service retailing contributes tremendously to the economy of most Asian countries [1,2]. Hence, the service retail industry is moving to differentiate itself in a non-traditional manner by embracing contemporary means of demarcation. The theoretical framework derived for this research from a broad perspective of relevant seminal and current literature indicates the power of corporate reputation in influencing consumers’ trust in products and services [3]. The framework also describes consumers’ trust in products and services purchased from retailers based on consumers’ perceived quality of the products and services [1,4,5]. Other trust building factors include consumers’ repeat purchases or repeat visits to retailers and dissemination of positive word of mouth [6,7,8,9]. Deeply rooted service theories revolve around quality of service as the primary contributor to a retailer’s ability to attract customers, ignoring other significant issues around the globe.

One such pertinent issue is CSR and its ability to evoke positive behaviour toward the service retailers. There is a dearth of research on CSR’s contribution to corporate reputation and its direct relationship with eminent marketing concepts in
the service industry [10,11]. This research therefore explores the influence of CSR on corporate reputation and the direct influence on word of mouth (WoM) intentions, repurchase intentions (RPI) and perceived food quality (PFQ) in Hong Kong’s fast food retail industry, drawing upon theories and scales established by [11,12,13,14].

1.1 Background of the Study

Hong Kong is one of the world’s strongest economies with a Western influence that has stimulated the expansion of Chinese style fast food chain stores and Western fast food franchises [8]. Though not known for their loyalty, Hong Kong consumers have an affinity toward the concept of eating out [15] thereby providing fast food restaurants with ample opportunities to expand [8,16,17,18].

Conversely, the expansion of fast food chains merely creates higher competition and less recognition. Therefore, fast food retailers seek competitive advantages with concepts such as CSR incorporated into retail management. Hong Kong consumers are increasingly conscious of what they buy and where they buy, placing importance on social and environmental sustainability [19,20], forcing retailers to acknowledge societal-oriented marketing and incorporate CSR in their business strategy.

Brand image and reputation are very important in the fast food industry where consumers prefer to frequent restaurants recognized for serving good quality, tasty food that is hygienically prepared and served in clean surroundings [4]. Such restaurants must therefore have a good reputation in order to provide the recognition necessary to provoke revisits and recommendations. As competitiveness intensifies, food retailers face huge challenges in sustaining profitability and growth. Reputable fast food restaurants find positive word of mouth important for attracting new customers, and positively perceived food quality is crucial to entice return customers who are imperative for business sustainability.

1.2 Fast Food Retailing and Corporate Social Responsibility (CSR)

Retailers brand themselves to tap into consumers’ need for retail uniqueness [6,21]. Brand preference is a significant antecedent of customer loyalty in Hong Kong [22]. Branding aids in developing a discernible retail business, which assists customers with recognizing and choosing a retailer to shop at. New strategies such as
business sustainability through successful CSR activities are being rapidly introduced into the retail arena [23,24,25,26].

Fast food retailers adopt CSR in their business strategy as it assists in building a brand of retail, helps recognition and provides distinction [27,28]. CSR would be particularly beneficial to fast food retailers as they are involved in a business where there is enormous concern over consumer health, supplies that affect animal rights, free range farming, pesticide-free products, and organic supplies. Word of mouth (WoM) is a free walking advertisement for an organisation. However, while a positive WoM can benefit an organisation greatly, a negative WoM can cause the organisation to collapse [29,30]. It is therefore important for organisations to develop strategies that will help build positive WoM. Studies indicate that CSR directly contributes to WoM, as customers who see CSR activities benefiting the causes that are close to their hearts will either preach positively or participate in those programmes [30,31,32].

Customers’ repurchase intention is useful for retailers as it indicates the retention of customers. Peelen [33] claimed that it is five to ten times more costly to obtain a new customer than it is to retain an existing one. Repurchase intentions improve due to customers’ satisfaction with something or everything that is offered by the retailer. Studies suggest that CSR’s influence on repurchase intention is closely associated to customers’ level of awareness [32,34,35,36]. The more aware customers are about the CSR activities conducted by the retailer, the more confident they are of the brand of retailer.

This research empirically investigated the contribution of CSR to corporate reputation, WoM intentions, repurchase intentions (RPI) and perceived food quality (PFQ). This phenomenon, coupled with the current interest in CSR, gives rise to the aim of the present research whereby the contribution of CSR activities to brand reputation and the mediating role of retail brand reputation on factors that would influence retail sustainability, namely customers’ repurchase intentions or customer retention is examined. This research further explored the influence of CSR and retail reputation on perceived food quality of fast food retails, which also contributes to the retention of consumers. Finally, the research examined the influence of CSR and reputation on the direction of word of mouth that would influence the gain of new customers and returning customers.
2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The following provides an overview of the literature concerning the fast food retailing in Hong Kong and investigates the relationships among corporate social responsibility, corporate reputation and consumer behaviour and intentions, in particular the concepts of repurchase intention, perceived food quality and word of mouth intention in the fast food retailing industry.

2.1 Fast Food Retail in Hong Kong

Foreign fast food retailers are striving to convince consumers that their business is ethically sound, earning credibility for their responsible behaviour towards the environment, society, and its employees [37,38]. Fast food consumers in China and Hong Kong further show an inclination to brand consciousness, with the younger generation leaning towards well established brands of fast food retailers compared to local fast food restaurants that are yet to establish their brand names [8]. Therefore CSR is an excellent tool to establish a strong brand image and build a reputation that consumers will have no doubt about when selecting a fast food restaurant. The fast food retail industry is more sensitive to brand recognition as it provides psychological benefits such as hygienically prepared food that is safe for consumption if prepared and consumed at a recognizable brand of retail outlet [4].

2.2 Corporate Social Responsibility (CSR)

CSR was introduced as early as the 1950s as a simple declaration to establish a business’s commitment to produce and sell in accordance with society’s beliefs, values and economic expansion [39]. However, CSR is now clearly a 21st century phenomena that has initiated a variety of opportunities and complications for retailers.

CSR at fast food retails is more convoluted than at retails selling tangible products. As established earlier, retail is part of the complex service industry. Here, food poses more complexity as it carries all of the service industries’ characteristics, thus the quality of the food and the service rendered can only be measured using customer perception [40]. This implies that food service retailers need to place great importance on customer satisfaction, the measures of which include nutritional, palatability and hygiene factors. The present research places CSR as a unique stimulus for fast food retailers in Hong Kong to gain a good reputation, positive word
of mouth, repeat visits and purchases, and increased positive perception of the overall food quality. Consumers are generally keen to be socially responsible and therefore seek ethical businesses to trade and build relationships with [41]. As this group of consumers grow in number, it is imperative for fast food retailers to proactively practice CSR in order to achieve a competitive advantage [27,28]. There are an increasing number of studies that suggest consumers in developed and developing countries are quickly converting to users of socially and environmentally friendly services and products [21,28].

2.3 Relationships between CSR, Reputation and Perceived Food Quality

Studies show that consumers are influenced by the CSR initiatives of a company and this influence is seen as positive in the way they perceive the quality of the service [34,42,43,44]. However, this is arguable as the sheer fact that the service characteristic is unique, indicates the difficulty one would face in evaluating service quality [35]. [45] advocated that customers do not judge service quality based on its outcome. In fact, a customer perceives quality based on several indicators depending on the type of service. The quality of service at a fast food retail can be judged based on the food, packaging, front-line service, outlet ambiance, convenience, consistency, bundled meal, and reliability [46]. This evaluation of quality includes the retailers’ initiatives to serve quality food with reference to healthy ingredients, such as pesticide-free, organic, and raw material production complying with animal rights protocols. For the purpose of this research, the perceived quality indicator was taken to be customers’ perception of the food quality in Hong Kong fast food restaurants. [35] affirmed that customers of fast food are fundamentally bound to a retailer when they positively perceive the quality of food, which shows that CSR activities may not directly contribute to customers’ commitment to a particular retailer. Moreover, CSR is assumed to play a bigger role as a crisis management strategy rather than an influence of buying intentions [47].

2.4 Relationships between CSR, Reputation and Word of Mouth Intention

Positive WoM is a pertinent factor to measure current customers’ willingness to talk positively about the product or retailer and is a free form of advertising. Customer experience with products and services experience leads to external communication, [5,48,49], primarily WoM, which can be a boon or a bane. Positive
WoM is warmly welcomed by the retailer while negative WoM is something the retailer needs to rectify, either using public relations or CSR as a crisis management tool [47]. Empirical studies show that satisfied customers disseminate positive WoM, which subsequently turns into better sales [6,30]. WoM is a pertinent evaluative tool as it helps potential buyers to purchase confidently, reducing their uncertainty due to unknown risk [50,51]; it is also an influential source of information, affecting the choice of brand and brand loyalty [51,52,53,54]. Customer satisfaction and brand preference on loyalty in Hong Kong’s service industry makes a significant contribution by helping managers of the service providers better understand their customers and manage their products [22]. [48] advocated that the greatest gift a consumer can give the retailer is their unconscious deliverance of positive messages regarding the retailer. This would augment brand image, recognition and retail traffic [55]. Likewise, employees who are happy, satisfied and proud of being part of the retail will pass positive WoM to friends, family and other customers, rendering better business and, in the case of fast food retailers, better store traffic and sales [56].

2.5 Relationship between CSR, Reputation and Repurchase Intention

Sociological studies suggest that CSR programmes significantly change the willingness of managers to repeat purchase [32,34,35]. Therefore, willingness to repeat purchase in response to CSR programmes of a retailer may be linked to awareness of customers. In other words, customers who are aware of the impact of various social and environmental issues on the future of healthy living, react positively toward socially responsible organizations [36]. CSR programmes that are close to the causes that customers are keen on, can influence customers to be altruistic [57]. Furthermore, [23] and [7] found significant relationships linking CSR to positive perceptions that lead to loyalty and repeat purchases. Studies show that as affluent customers become more aware of the increasing environmental and social problems, the CSR notion could become pertinent to customers and a significant stimulus to repurchase [7]. Customers will repeat purchase at the retails that fulfill their expectations [58]. Hence, with more businesses involving themselves in CSR activities, there is an increased customer awareness of CSR’s importance that will drive them to anticipate CSR practices by all the retailers they visit.

Literatures how an indirect relationship between a business’ involvement in CSR activities and on both repeat purchases and perceptions of service quality
There is a dearth of studies translating CSR directly into WoM or into increasing perceived quality and repurchase intention. There are studies looking into the contribution of WoM to the intention to purchase, mainly taking WoM as a positive attribute to purchase and more so if the business involvement in CSR activities is not immediately apparent to customers [29,60]. Studies have been undertaken using CSR as a moderating factor to enhance reputation and brand image, while others indicate that businesses use CSR simply because others are doing the same [61,62]. Similarly, literature on CSR’s contribution to marketing services is complex, inconsistent and contradictory [35,63,64]. Therefore, this research set out to investigate the contribution of fast food retailers’ CSR involvement to building a strong reputation that would instigate positive WoM, and increase perceived service quality (PSQ) and repurchase intention (RPI). There is little doubt that CSR significantly strengthens the reputation of a retail brand, however it is less certain if retail reputation plays a direct role in influencing positive WoM, PSQ and RPI, as reputation is developed over a long period of time based on customers’ experience of various service factors.

2.6 Hypotheses Development

This research studies the theoretical relationships derived from the foregoing analysis of the relevant literature. Marketers will benefit from knowing the exact purpose of CSR in fast food retail and precisely which of the marketing variables are affected or influenced by CSR. This study aims at evaluating whether the success of CSR activities could be reflected in the positive reputation of the retailer, which results in positive WoM intentions, positive RPI and positive PFQ. This subsequently improves the retailers market positioning and ability to sustain market leadership. Hence, the following hypotheses are posited to examine the contribution of CSR to the behaviour of consumers in Hong Kong’s fast food retail industry.

Hypothesis H1. CSR activities of a fast-food restaurant in Hong Kong increase customer WoM intentions.

Hypothesis H2. CSR activities of a fast-food restaurant in Hong Kong increase customer RPI.

Hypothesis H3. CSR activities of a fast food restaurant in Hong Kong increase customer PFQ.
Hypothesis H4 below postulates the direct relationship between fast food retailers' involvement in CSR activities on their reputation as a responsible and ethical retailer. This hypothesis reflects the notion that CSR practices of an organisation have the ability to build and strengthen the reputation of the organization [11,34,62]. This allows marketers to leverage CSR activities with the purpose of building their reputation and consequently choosing to participate in activities that are suitable for this objective.

Hypothesis H4. CSR activities of a fast-food restaurant in Hong Kong increase its corporate reputation as perceived by customers.

Hypotheses H5, H6 and H7 below show the direct relationships between the reputation of fast food retailers and customer WoM intentions, customer RPI and customer PFQ.

Hypothesis H5. Corporate reputation of a fast-food restaurant in Hong Kong increases customer WoM intentions.

Hypothesis H6. Corporate reputation of a fast-food restaurant in Hong Kong increases customer RPI.

Hypothesis H7. Corporate reputation of a fast-food restaurant in Hong Kong increases customer PFQ.

H5, H6 and H7 show the direct relationships between the reputation of fast food retailers and customer WoM intentions, customer RPI and customer PFQ. As in H1, H2 and H3, these hypotheses test to see if corporate reputation has more influence than CSR on the identified marketing concepts [65,66]. This comparison allows marketers to undertake CSR activities that are suitable for the purpose they propose. For most businesses, reputation is the traditional organisational concept that the entire business will work on building. However, few relate this to CSR, as in many instances CSR has been misconstrued as a crisis management tool used for public relations in the organisation rather than a tool used by marketers to build reputation [47,67].

The final hypotheses H8, H9, and H10 have been postulated to depict the partial mediating influence of fast food retailers' reputation on the relationships between CSR and customer WoM intentions, customer RPI, and customer PFQ [34,68]. These hypotheses are intended to test the importance of fast food retailers' involvement in CSR activities in order to build a reputable retail that would gain positive customer WoM intentions, positive customer RPI, and positive customer PFQ.
Hypothesis H8. Corporate reputation of a fast-food restaurant in Hong Kong partially mediates the relationship between CSR and customer WoM intentions.

Hypothesis H9. Corporate reputation of a fast-food restaurant in Hong Kong partially mediates the relationship between CSR and customer RPI.

Hypothesis H10. Corporate reputation of a fast-food restaurant in Hong Kong partially mediates the relationship between CSR and customer PFQ.

2.7 Research Model

Ten hypotheses have been developed based on the literature on the corporate social responsibility, corporate reputation, word of mouth, repurchase intention and perceived food quality.

![Research Model Diagram]

Fig. 1. Research Model

Based upon these ten hypotheses developed, a research model (Fig. 1) was devised by adapting the following sets of constructs from prior studies.
3. METHODOLOGY

3.1 Sample and Data Collection

As this research investigates the customers of fast food restaurants in Hong Kong, the unit of analysis is individuals. Therefore, questionnaires were distributed to a sample of 400 fast food customers, who were 18 years old and above. The research began by setting up a database with locations of all the fast food restaurants in Hong Kong. In order not to be bias when selecting restaurants, the researcher randomly selected several locations using a simple lottery method. In addition, in order to ensure these are fast food restaurants that have high traffic, the correct timing and days to visit the restaurants were determined from a publicly available database. The questionnaires were distributed to the restaurant patrons outside the restaurants where the restaurant owner’s consent to interview patrons was not required. A total of 20 locations were selected randomly and visited by the researcher to distribute the research questionnaires. 400 self-administered, personal survey questionnaires for this study were randomly distributed to customers of fast food restaurants in the public areas of identified fast food restaurants in these 20 locations.

Ethical issues during the data collection process were considered. The information statement together with the questionnaires helped to address participants' concerns over confidentiality. Firstly, the questionnaires were distributed in a public place to customers of fast food restaurants who were given the freedom to choose to participate or not. A completed and returned questionnaire was taken as consent of the respondent to participation. Secondly, in order to address the ethical issue on anonymity, respondents' personal information was not required on the questionnaire and the places where the questionnaire was distributed remains confidential to the researcher. The researcher feels that the information statement provided to the respondents assuring them of anonymity strengthened the response rate. Thirdly, the questionnaire design took into account the sensitive nature of the research topic and avoided questions that may lead to falsification of responses or to an increase in social desirability [69]. Scaled items were adapted to accommodate self-administered survey and evoke fair responses. Finally, completed questionnaires and all other information that could link directly or indirectly to respondents will be kept securely by the researcher and disposed of after five years.
3.2 Research Instruments
This research has a total of five constructs: corporate social responsibility, corporate reputation, customer word of mouth intentions, customer repurchase intentions, and customer perceived food quality.

Table 1. Measuring items and sources

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Source of measuring items</th>
<th>Number of items</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Social Responsibility</td>
<td>[11]</td>
<td>5</td>
<td>Likert scale of 1 (strongly disagree) to 7 (strongly agree)</td>
</tr>
<tr>
<td>Corporate Reputation</td>
<td>[12]</td>
<td>3</td>
<td>Likert scale of 1 (strongly disagree) to 7 (strongly agree)</td>
</tr>
<tr>
<td>Customer Word of Mouth Intentions</td>
<td>[13,14,70]</td>
<td>6</td>
<td>Likert scale of 1 (strongly disagree) to 7 (strongly agree)</td>
</tr>
<tr>
<td>Customer Repurchase Intentions</td>
<td>[13,14]</td>
<td>5</td>
<td>Likert scale of 1 (strongly disagree) to 7 (strongly agree)</td>
</tr>
<tr>
<td>Customer Perceived Food Quality</td>
<td>[11,71]</td>
<td>3</td>
<td>Likert scale of 1 (strongly disagree) to 7 (strongly agree)</td>
</tr>
</tbody>
</table>

Table 2. A Summary of measuring items for the five constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Measuring items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Social Responsibility</td>
<td>This fast food restaurant is very concerned with the local community.</td>
</tr>
<tr>
<td></td>
<td>This fast food restaurant is very concerned with environmental protection.</td>
</tr>
<tr>
<td></td>
<td>This fast food restaurant is very concerned with customers’ benefits.</td>
</tr>
<tr>
<td></td>
<td>This fast food restaurant is very concerned with the rights of female and disabled employees.</td>
</tr>
<tr>
<td></td>
<td>This fast food restaurant actively participates in social initiatives.</td>
</tr>
<tr>
<td>Corporate Reputation</td>
<td>I believe that this fast food restaurant does what it promises for its customers.</td>
</tr>
<tr>
<td></td>
<td>This fast food restaurant has a good reputation.</td>
</tr>
<tr>
<td></td>
<td>I believe that the reputation of this fast food restaurant is better than its competitors.</td>
</tr>
<tr>
<td>Customer Repurchase Intention</td>
<td>I intend to buy from this fast food restaurant next time.</td>
</tr>
<tr>
<td></td>
<td>I will continue buying from this fast food restaurant.</td>
</tr>
<tr>
<td></td>
<td>Most likely, I will buy from this fast food restaurant next time.</td>
</tr>
<tr>
<td></td>
<td>I will consider this fast food restaurant my first choice if I need to buy fast food.</td>
</tr>
<tr>
<td></td>
<td>I will buy more from this fast food restaurant in the next few months.</td>
</tr>
<tr>
<td>Perceived Food Quality</td>
<td>The food from this fast food restaurant is better than other competitors.</td>
</tr>
<tr>
<td></td>
<td>The food quality of this fast food restaurant is higher than other competitors.</td>
</tr>
<tr>
<td></td>
<td>The food from this fast food restaurant is more consistent and reliable in comparison with other competitors.</td>
</tr>
<tr>
<td>Word of Mouth Intention</td>
<td>I would say positive things about this fast food restaurant.</td>
</tr>
<tr>
<td></td>
<td>I would recommend this fast food restaurant to anyone who seeks my advice.</td>
</tr>
<tr>
<td></td>
<td>I would encourage friends to purchase fast food from this restaurant.</td>
</tr>
<tr>
<td></td>
<td>I would recommend this fast food restaurant to my friends.</td>
</tr>
<tr>
<td></td>
<td>I would recommend this fast food restaurant to my acquaintances.</td>
</tr>
<tr>
<td></td>
<td>If my friends were looking for fast food service, I would tell them to try this restaurant.</td>
</tr>
</tbody>
</table>
The items chosen to measure these constructs were borrowed from various established literature as shown in Table 1 below.

Corporate social responsibility was represented by five items, corporate reputation was measured using three single dimensional item scales, six items represented customer word of mouth intentions, customer repurchase intentions was measured using five single dimensional items, and three items represented customer perceived food quality. A summary of measuring items is shown in Table 2 below.

### 3.3 Data Analysis

The measures used in this research were cleaned and assessed using validity and reliability tests to establish accuracy of data collected. In the current research, these assessments were performed via Exploratory Factor Analysis (EFA) which is then confirmed using Confirmatory Factory Analysis (CFA) to ensure the data is suitable to run Structural Equation Modelling (SEM). This assessment relates to ensuring that items used to measure one construct hang together or are closely related to each other.

### 4. FINDINGS

#### 4.1 Characteristics of the Sample

Table 3 below shows the characteristics of respondents in respect of age, marital status, level of education, monthly salary and respondents’ nationality.

<table>
<thead>
<tr>
<th>Table 3. Demographic profile of valid respondents (n=384)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Under 20</td>
</tr>
<tr>
<td>20 to 29</td>
</tr>
<tr>
<td>30 to 39</td>
</tr>
<tr>
<td>40 to 49</td>
</tr>
<tr>
<td>50 to 59</td>
</tr>
<tr>
<td>60 and above</td>
</tr>
<tr>
<td>Marital Status</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Level of Education</td>
</tr>
<tr>
<td>Primary</td>
</tr>
<tr>
<td>Secondary</td>
</tr>
<tr>
<td>Undergraduate</td>
</tr>
<tr>
<td>Postgraduate</td>
</tr>
<tr>
<td>Monthly Salary (HK$)</td>
</tr>
<tr>
<td>Below 10,000</td>
</tr>
<tr>
<td>10,000 to 19,999</td>
</tr>
<tr>
<td>20,000 to 40,000</td>
</tr>
<tr>
<td>Above 40,000</td>
</tr>
<tr>
<td>Respondents’ Nationality</td>
</tr>
<tr>
<td>Hong Kong Resident</td>
</tr>
<tr>
<td>Visitor from China</td>
</tr>
<tr>
<td>Visitor from other countries apart from China</td>
</tr>
</tbody>
</table>
4.2 Validity Test

In running Exploratory Factor Analysis (EFA) to assess the items used to measure CSR and CR, the principal component method was used, rotating the data with varimax rotation and suppressing loadings below 0.5. This research assumes the CSR and CR are nonrelated in order to draw out the actual benefit of CSR in enhancing CR. Thus a Varimax method of rotation was used. Table 4 below shows all five items for CSR loading highly in component 1 which is named CSR, while all three items for CR loaded highly into component 2, and is now named as CR. The five items measuring CSR and three items measuring CR loaded, fulfilling conditions for convergent and discriminant validity.

Table 5 below reflects that all six items used to measure customers’ WoM intention loaded highly in component 1, while only three out of five items measuring customers’ RPI loaded highly in component 2. Two items RPI4 and RPI5 were removed. Two items measuring PFQ loaded highly in component 3, while one item PFQ3 was removed as it did not load clearly.
4.3 Reliability Test
Table 6 below shows the findings of Cronbach’s alpha test. The Cronbach’s alpha values of all the latent variables of this research are above 0.7, satisfying [72] rule of thumb. Thus, the validity and reliability tests above indicate that the items used to measure the latent variables converge and discriminate.

Table 6. Reliability test output

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No of items</th>
<th>Cronbach’s alpha</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR</td>
<td>5</td>
<td>0.78</td>
<td>17.79</td>
<td>4.73</td>
</tr>
<tr>
<td>CR</td>
<td>3</td>
<td>0.76</td>
<td>9.99</td>
<td>2.91</td>
</tr>
<tr>
<td>RPI</td>
<td>3</td>
<td>0.90</td>
<td>8.70</td>
<td>3.15</td>
</tr>
<tr>
<td>PFQ</td>
<td>2</td>
<td>0.86</td>
<td>11.00</td>
<td>3.28</td>
</tr>
<tr>
<td>WoM</td>
<td>6</td>
<td>0.94</td>
<td>21.48</td>
<td>6.96</td>
</tr>
</tbody>
</table>

4.4 Confirmatory Factor Analysis (CFA)
4.4.1 Measurement model and CFA for CSR and CR
Fig. 2 below shows the measurement model for CSR and CR used to assess the validity. Confirmatory factor analysis (CFA) was used to verify the measurement assessment performed above. As such, measurement models of latent variables are drawn and confirmed the findings above using structural equation modeling (SEM).
Table 7 below shows a summary of model fit which shows that the model does not quite fit as $\text{CMIN}=45.01$, df=19, and $p$-value=0.001. However, $\text{CIM/DF}=2.37$ shows a model fit [73,74]. This is corroborated by the coefficients $\text{GFI}=0.97$, $\text{AGFI}=0.95$ and $\text{CFI}=0.97$, all of which are $>0.9$ indicating an acceptable model. As $\text{RMSEA}<0.08$ is the rule of the thumb to accept a model fit, the $\text{RMSEA}=0.06$ and $\text{PCLOSE}=0.0021$ ($\text{PCLOSE}<0.05$) show an acceptable model. The Factor Score Weights in Table 8 below and Standardized Total Effects in Table 9 show the clear loading of CSR items and CR items into two distinctive columns, indicating the convergent and discriminant validity of items.

Table 7. Model fit summary for measurement model – CSR and CR

<table>
<thead>
<tr>
<th></th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CIM/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>45.01</td>
<td>19</td>
<td>0.001</td>
<td>2.369</td>
<td>0.971</td>
<td>0.945</td>
<td>0.972</td>
<td>0.060</td>
<td>0.0021</td>
</tr>
<tr>
<td>Saturated model</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Independence model</td>
<td>965.376</td>
<td>28</td>
<td>0.000</td>
<td>34.478</td>
<td>0.469</td>
<td>0.318</td>
<td>0.000</td>
<td>0.296</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 8. Factor score weights (group number 1 – default model)

<table>
<thead>
<tr>
<th></th>
<th>A2c</th>
<th>A2b</th>
<th>A2a</th>
<th>A1a</th>
<th>A1b</th>
<th>A1c</th>
<th>A1d</th>
<th>A1e</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>.151</td>
<td>.302</td>
<td>.192</td>
<td>.039</td>
<td>.034</td>
<td>.046</td>
<td>.036</td>
<td>.047</td>
</tr>
<tr>
<td>CSR</td>
<td>.040</td>
<td>.079</td>
<td>.050</td>
<td>.117</td>
<td>.102</td>
<td>.136</td>
<td>.107</td>
<td>.141</td>
</tr>
</tbody>
</table>

Table 9. Standardized total effects (group number 1 – default model)

<table>
<thead>
<tr>
<th>Items</th>
<th>CR</th>
<th>CSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2c</td>
<td>.655</td>
<td>.000</td>
</tr>
<tr>
<td>A2b</td>
<td>.800</td>
<td>.000</td>
</tr>
<tr>
<td>A2a</td>
<td>.713</td>
<td>.000</td>
</tr>
<tr>
<td>A1a</td>
<td>.000</td>
<td>.643</td>
</tr>
<tr>
<td>A1b</td>
<td>.000</td>
<td>.643</td>
</tr>
<tr>
<td>A1c</td>
<td>.000</td>
<td>.692</td>
</tr>
<tr>
<td>A1d</td>
<td>.000</td>
<td>.599</td>
</tr>
<tr>
<td>A1e</td>
<td>.000</td>
<td>.660</td>
</tr>
</tbody>
</table>

Note: A1c – items measuring CSR, A2c – items measuring CR

4.4.2 Measurement model and CFA for WoM, RPI and PFQ

The CFA used to verify the validity of items measuring WoM, RPI and PFQ is portrayed in the measurement model displayed in Fig. 3 below. Although the model summary in Table 10 indicates that the model does not quite fit because $\text{CMIN}=108.04$, df=41, and $p$-value=0.0001, the ratio of $\text{CIM/DF}=2.6$ ($\text{CIM/DF}<0.3$) shows a model fit [73,74]. This acceptable measurement model fit is further supported by the $>0.9$ values of $\text{GFI}=0.95$, $\text{AGFI}=0.92$ and $\text{CFI}=0.98$. 

Fig 2 below shows the measurement model for CSR and CR used to assess the role played by corporate reputation, intervening the relationship between CSR and WoM, RPI and PFQ. Hence, more importantly, the present study verifies the mediating role of corporate reputation on the relationship between CSR and WoM, RPI and PFQ.
Moreover, RMSEA<0.08 is the rule of the thumb to accept a model fit while the RMSEA for this data shows RMSEA=0.065 and PCLOSE=0.05 (PCLOSE<0.05) show an acceptable model. As [73] and [74] assert, at least four of the various measures are sufficient to accept a model fit. The Factor Score Weights in Table 11 and Standardized Total Effects in Table 12 show the clear loading of WoM items, RPI items and PFQ items into three distinctive columns.

Finally, the removal of two items from RPI and one item from PFQ has allowed other items to load distinctively and highly into the respective latent constructs. Thus the validity and reliability of the items concerning WoM, RPI and PFQ are confirmed with the Critical Ratio (C.R.) values as seen in Table 13, whereby all CRs are >1.96, [73,74,75]. The relationship between the latent variables are confirmed as seen in Table 14 whereby the covariances and correlations show strong relationships as all Critical Ratios are above 1.96 and correlations are above 0.5. Thus, the data collected is valid, reliable and now suitable to test significant of the hypotheses.

Table 10. Model fit summary for measurement model – WoM, RPI and PFQ

<table>
<thead>
<tr>
<th></th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CIM/DF</th>
<th>GFI</th>
<th>AGFI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>108.037</td>
<td>41</td>
<td>0.000</td>
<td>2.635</td>
<td>.951</td>
<td>.921</td>
<td>.981</td>
<td>.065</td>
<td>.050</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>0.000</td>
<td>1.000</td>
<td>.64874</td>
<td>.221</td>
<td>.065</td>
<td>.000</td>
<td>.408</td>
<td>.000</td>
</tr>
<tr>
<td>Independence model</td>
<td>3568.050</td>
<td>55</td>
<td>.000</td>
<td>64.874</td>
<td>.221</td>
<td>.065</td>
<td>.000</td>
<td>.408</td>
<td>.000</td>
</tr>
</tbody>
</table>

Fig. 3. Measurement model for WoM, RPI and PFQ
Table 11. Factor score weights (group number 1 – default model)

<table>
<thead>
<tr>
<th>Items</th>
<th>A5f</th>
<th>A5e</th>
<th>A5d</th>
<th>A5c</th>
<th>A5b</th>
<th>A5a</th>
<th>A4b</th>
<th>A4a</th>
<th>A3c</th>
<th>A3b</th>
<th>A3a</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFQ</td>
<td>0.019</td>
<td>0.025</td>
<td>0.043</td>
<td>0.030</td>
<td>0.021</td>
<td>0.015</td>
<td>0.366</td>
<td>0.391</td>
<td>0.013</td>
<td>0.014</td>
<td>0.018</td>
</tr>
<tr>
<td>WOM</td>
<td>0.087</td>
<td>0.114</td>
<td>0.194</td>
<td>0.133</td>
<td>0.093</td>
<td>0.066</td>
<td>0.022</td>
<td>0.024</td>
<td>0.009</td>
<td>0.010</td>
<td>0.012</td>
</tr>
<tr>
<td>RPI</td>
<td>0.008</td>
<td>0.010</td>
<td>0.018</td>
<td>0.012</td>
<td>0.009</td>
<td>0.006</td>
<td>0.014</td>
<td>0.015</td>
<td>0.251</td>
<td>0.273</td>
<td>0.342</td>
</tr>
</tbody>
</table>

Table 12. Standardized total effects (group number 1 – default model)

<table>
<thead>
<tr>
<th>Items</th>
<th>PFQ</th>
<th>WOM</th>
<th>RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5f</td>
<td>0.000</td>
<td>0.836</td>
<td>0.000</td>
</tr>
<tr>
<td>A5e</td>
<td>0.000</td>
<td>0.872</td>
<td>0.000</td>
</tr>
<tr>
<td>A5d</td>
<td>0.000</td>
<td>0.923</td>
<td>0.000</td>
</tr>
<tr>
<td>A5c</td>
<td>0.000</td>
<td>0.887</td>
<td>0.000</td>
</tr>
<tr>
<td>A5b</td>
<td>0.000</td>
<td>0.843</td>
<td>0.000</td>
</tr>
<tr>
<td>A5a</td>
<td>0.000</td>
<td>0.762</td>
<td>0.000</td>
</tr>
<tr>
<td>A4b</td>
<td>0.875</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>A4a</td>
<td>0.884</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>A3c</td>
<td>0.000</td>
<td>0.000</td>
<td>0.853</td>
</tr>
<tr>
<td>A3b</td>
<td>0.000</td>
<td>0.000</td>
<td>0.852</td>
</tr>
<tr>
<td>A3a</td>
<td>0.000</td>
<td>0.000</td>
<td>0.885</td>
</tr>
</tbody>
</table>

Table 13. Regression weights (group number 1 – default model)

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3c: RPI</td>
<td>1.001</td>
<td>.048</td>
<td>20.701</td>
<td>***</td>
<td>par_1</td>
</tr>
<tr>
<td>A5a: WOM</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5b: WOM</td>
<td>1.246</td>
<td>.069</td>
<td>17.962</td>
<td>***</td>
<td>par_2</td>
</tr>
<tr>
<td>A5c: WOM</td>
<td>1.325</td>
<td>.070</td>
<td>18.936</td>
<td>***</td>
<td>par_3</td>
</tr>
<tr>
<td>A5d: WOM</td>
<td>1.396</td>
<td>.070</td>
<td>19.811</td>
<td>***</td>
<td>par_4</td>
</tr>
<tr>
<td>A5e: WOM</td>
<td>1.316</td>
<td>.071</td>
<td>18.642</td>
<td>***</td>
<td>par_5</td>
</tr>
<tr>
<td>A5f: WOM</td>
<td>1.267</td>
<td>.072</td>
<td>17.696</td>
<td>***</td>
<td>par_6</td>
</tr>
<tr>
<td>A4a: PFQ</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4b: PFQ</td>
<td>.978</td>
<td>.051</td>
<td>19.200</td>
<td>***</td>
<td>par_10</td>
</tr>
<tr>
<td>A3a: RPI</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3b: RPI</td>
<td>.915</td>
<td>.043</td>
<td>21.378</td>
<td>***</td>
<td>par_11</td>
</tr>
</tbody>
</table>

Note: *** = p-value<0.05

Table 14. Covariances and correlations (group number 1 – default model)

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
<th>Label</th>
<th>Correlation estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPI: WOM</td>
<td>.573</td>
<td>.065</td>
<td>8.788</td>
<td>***</td>
<td>par_7</td>
<td>.627</td>
</tr>
<tr>
<td>WOM: PFQ</td>
<td>.768</td>
<td>.079</td>
<td>9.709</td>
<td>***</td>
<td>par_8</td>
<td>.758</td>
</tr>
<tr>
<td>RPI: PFQ</td>
<td>.659</td>
<td>.079</td>
<td>8.328</td>
<td>***</td>
<td>par_9</td>
<td>.570</td>
</tr>
</tbody>
</table>

Note: *** = p-value<0.05

4.5 Hypotheses Testing by Structural Equation Modeling (SEM)

Testing of the hypotheses for this research is carried out by using SEM as displayed in Fig. 4 below. The research’s focus is on the influence of CSR on CR,
and CR’s influence on WoM intentions, RPI and PFQ. Hence, more importantly, the present study verifies the mediating role played by corporate reputation, intervening the relationship between CSR and WoM, RPI and PFQ. The research further verifies the direct influences of CSR on the three dependent latent constructs of WoM, RPI and PFQ.

**Fig. 4. Structural equation modeling portraying five latent variables**

**4.5.1 Significance tests**

The Regression Weights displayed in Table 15 below shows that the relationships postulated in Figure 4 are significant. The influence of CSR on CR is significant as the critical ratio (C.R.)=4.34, p-value=.0001, and p-value <0.05. The direct influential relationship of CSR on WoM is significant as C.R.=2.59, p-value=0.01, and p-value<0.05. The direct influential relationship of CSR on RPI is significant as C.R. =3.42, p-value=0.0001, and p-value <0.05. The influence of the relationship of CSR on PFQ is significant as C.R.=2.25, p-value=0.025, and p-value <0.05. The influential relationship of CR on RPI is significant as C.R.=9.62, p-value =0.0001, and p-value <0.05. The influential relationship of CR on WoM is determined with C.R.=10.19, p-value=0.0001, and p-value <0.05, showing significance.

**Table 15. Regression weights**

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>P</th>
<th>Standard estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR &lt;- CSR</td>
<td>.364</td>
<td>.025</td>
<td>14.336</td>
<td>**</td>
<td>.591</td>
</tr>
<tr>
<td>RPI &lt;- CR</td>
<td>.524</td>
<td>.055</td>
<td>9.615</td>
<td>***</td>
<td>.485</td>
</tr>
<tr>
<td>WoM &lt;- CR</td>
<td>1.029</td>
<td>.101</td>
<td>10.188</td>
<td>**</td>
<td>.515</td>
</tr>
<tr>
<td>WoM &lt;- CSR</td>
<td>.161</td>
<td>.062</td>
<td>2.588</td>
<td>.010</td>
<td>.131</td>
</tr>
</tbody>
</table>
The influence of CR on PFQ is significant as C.R.=10.34 and p-value=0.0001. Furthermore, these relationships show strong standardized estimates. Hence, the hypotheses H1, H2, H3, H4, H5, H6 and H7 are supported. The positive values of Standard Estimates, show that the relationships are positive, thus when CSR involvement in a fast food restaurant increases, corporate reputation, positive WoM, RPI and PFQ increases. A similar finding is found in the relationships between CR and positive WoM, RPI and PFQ.

4.5.2 Mediation influence of CR

Table 16 below shows the application of SEM for estimation of Total Effect, Direct Effect and Indirect Effect that used to determine the mediating influence of CR between CSR and WoM, CSR and RPI, and CSR and PFQ.

Based on the results in Table 16, the following relationships must exist to allow mediation:

a. CSR to WoM, RPI, PFQ relationship exists, indication of a direct relationship.

b. CSR to CR relationship exists, hence mediator is related to exogenous variable.

c. CR to WoM, RPI, PFQ relationship exists, indicating a relationship between the mediator and the endogenous variable.

Table 16. Total effect, direct effect and indirect effect

<table>
<thead>
<tr>
<th></th>
<th>Std. total effect</th>
<th>Std/ direct effect</th>
<th>Std. indirect effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CSR</td>
<td>CR</td>
<td>CSR</td>
</tr>
<tr>
<td>CR</td>
<td>.591</td>
<td>.000</td>
<td>.591</td>
</tr>
<tr>
<td>PFQ</td>
<td>.424</td>
<td>.524</td>
<td>.114</td>
</tr>
<tr>
<td>WoM</td>
<td>.435</td>
<td>.515</td>
<td>.131</td>
</tr>
<tr>
<td>RPI</td>
<td>.460</td>
<td>.485</td>
<td>.173</td>
</tr>
</tbody>
</table>
The Direct Effect of CSR on WoM (0.131), on RPI (0.173), and on PFQ (0.114) indicates that the relationships in (a) above exist. The Direct Effect of CSR on CR (0.591) indicates that the relationship in (b) above exist. The Direct Effect of CR on WoM (0.515), on RPI (0.485), and on PFQ (0.524) indicates that the relationships in (c) above exist. The mediation effect of CR on the relationships suggested above is confirmed. However, in SEM, since the full model is represented, the Indirect Effect is used to suggest whether the mediation impact is full, partial or non-mediating. Therefore, using Table 16 above and the rule of the thumb suggested by [76], the following conclusion is made on the mediating effect of CR:

a. The direct relationships between CSR and WoM, CSR and RPI, and CSR and PFQ are all significant.
b. The indirect effect of CSR on WoM=0.306 (>0.085) and IE ≅ DE, hence CR is a partial mediator for the relationship between CSR and WoM.
c. The indirect effect of CSR on RPI=0.287 (>0.085) and IE ≅ DE, hence CR is a partial mediator for the relationship between CSR and RPI.
d. The indirect effect of CSR on PFQ=0.310 (>0.085) and IE ≅ DE, hence CR is a partial mediator for the relationship between CSR and PFQ.
e. The above conclusion indicates that CR is a partial mediator for the relationships between CSR and WoM, RPI and PFQ. Thus, the hypotheses H8, H9 and H10 are supported as well.

5. DISCUSSION AND IMPLICATIONS

This research was built on a strong platform of literature that produced the main research question and ten hypotheses for the purpose of verifying theories relating to the effect of CSR on consumer behaviour. The retail industry is evolving at a rapid pace, thus requiring an incessant flow of relevant new knowledge. The practical and theoretical implications of the findings from this research add such new knowledge by enriching understanding of the value of practicing CSR to build an organisation’s reputation.

The impact of CSR on perceived quality [8,35], corporate reputation and RPI have traditionally been studied as direct relationships [34,77], and CSR’s direct impact on WoM intentions has been discussed separately [13]. Also, much of the CSR literature has been dedicated to CSR’s influence on reputation and image [40].
while neglecting the mediating role played by corporate reputation in the relationships between CSR and consumer intentions and behaviour. This research therefore adds to the existing knowledge of CSR’s role in marketing by finding that a good corporate reputation together with relevant and integrated CSR provides a much stronger impact on the behaviour of consumers than CSR on its own may have.

As a partial mediator, corporate reputation plays a direct role in consumer actions. This being the case, the findings from this research indicate that nonconforming CSR activities may be a mover of certain consumer behaviour but it may not be very convincing nor is there an assurance that this will last long, as only incessant CSR activities contribute to sustainable behaviour. This suggests that in order to benefit most from CSR practices, businesses ought to develop a reputable brand using CSR as this would bring about a long term and sustainable positive impact on consumer behaviour and intentions. Therefore, this research’s theoretical contribution is the introduction of corporate reputation as a long term benefit to the relationship between CSR and customer behaviour and intentions.

Retail managers and service managers in general are able to build a strong reputation for their business. However, due to competitive pressure, CSR is beginning to be recognized as a resilient tool for enhancing reputation via positive consumer behaviour and intentions [6]. As service lacks consistency, it is difficult to maintain customer interest and buying behavior [78]. This research found that CSR components that are more focused toward retailing may have either a strong direct relationship or a strong relationship that is partially mediated by reputation. Thus, managers could either build the brand name of retail or add to their corporate reputation by employing CSR activities that are found suitable for their type of retail. Therefore, managers of the fast food retail industry may need to implement CSR activities or programmes that are capable of continuance and of building corporate reputation. This may be done by carrying out CSR programmes that are generally closer to customers’ interests. This research found that consumers are more likely to appreciate CSR activities that are visible to them, thus treating employees well will result in satisfied employees who will face customers with a happy disposition and a positive attitude [39].
6. LIMITATIONS AND FUTURE RESEARCH

The main limitation of this research is the sample used which is a subset of fast food restaurant customers in Hong Kong. The respondents may not have had any knowledge of CSR or may not have been aware of the CSR activities carried out by the retailer where they were interviewed. Hence generalizability may be distorted, as some of the respondents may have participated without fully knowing the reasons for CSR. The present research limited the influence of CSR and CR on three marketing concepts, however, there may be more than these concepts that may be affected by CSR and CR, such as corporate image that could mediate the abovementioned relationships.

Further related research might consider developing items for CSR that are more suitable for the type of retail being examined. Consideration might also be given to interviewing a group of visitors to Hong Kong, possibly from mainland China, in order to provide a comparison of CSR knowledge between local fast food retail customers and those from other jurisdictions. Lastly, future research might consider investigating whether new purchases are made due to customers’ knowledge that the retailer is practicing CSR and how much of that knowledge is gained by WoM.

7. CONCLUSION

This research shows that Hong Kong fast food customers are young adults who have limited spending power and can only frequently consume fast food. CSR is found to be directly related to corporate reputation, which is considered to be an important tool for sustainable business. Furthermore, the research revealed the partial mediating power of corporate reputation between the relationship of CSR and customer behaviour and intentions. CSR provides a competitive advantage to many businesses and should not be taken for granted as it plays a huge role in inducing positive word of mouth, repeat purchases, and positively perceived food quality. This research has undertaken a quantitative approach to evaluating the contribution of CSR to customer behaviour and intentions. In doing so, the research added the corporate reputation of the retailer as partial mediator in the relationship between CSR and customer behaviour and intentions. It has raised issues concerning the importance of CSR in changing customer behaviour and the pertinent partially mediating role played by corporate reputation in influencing CSRs’ impact on customer behaviour and intentions. As service is known to vary according to the
context in which it is offered, it is best for retail managers to identify CSR activities that best reflect their particular product or service. This will make it easier for customers to comprehend and evaluate, which will ultimately benefit the retailer.

**COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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Microfinance and Micro-Small-Medium Scale Enterprises (MSME’s) in Kasoa Municipality, Ghana

ABSTRACT

Limited access to credit is one of the key factors inhibiting the growth of micro-small-medium scale enterprises (MSME’s) in developing countries like Ghana. Hence, this study sought to identify determinants of access to credit and the factors influencing the volume of credit disbursed to MSME’s in Kasoa municipality of Ghana. The study used primary data collected from 140 randomly sampled MSME’s who applied for loan from Progressive Microfinance Company limited. The paired sample t-test was used to test whether there is significant difference between the amount demanded and the amount of credit received. The study used Probit model to analyze factors influencing the probability of access to credit while the Tobit model was used to analyze the determinants of amount of credit disbursed to the MSME’s. The paired-sample t-test revealed that the amount of credit received was significantly lower than the amount of credit demanded by the MSME’s. Empirical results from the Probit regression model indicated that educational level, provision of a personal guarantor, duration in business, permanent place of business and household size are the variables that significantly influence the probability of MSME’s accessing credit from the MFI’s. Moreover, empirical results from Tobit regression model show that sales level, availability of collateral security, business income, stock level and availability of bank statement have significant influence on the amount of credit disbursed to MSME’s. The study therefore recommends that MSME’s should be granted the required loan amount to enable them achieve their investment plans, and MSME’s should be encouraged to operate bank account since it would increase their chances of accessing larger loan size.
1. INTRODUCTION

Small and Medium scale Enterprises (SME’s) have been identified as channels for economic growth especially in most developing countries in the World. They are major sources of income and employment representing the fuel for national economic engine of every developing country. According to Ahiawodzi and Adade [1], SME’s represents about 90% of business and are responsible for about 50 to 60% of employment in most African countries. In the analysis of issues concerning SME’s in Ghana, Abor and Quartey [2] reported that SME’s are competent and abounds in job creation, providing about 85% of employment in the Ghanaian manufacturing sector. Ahiawodzi and Adade [1] further noted that SME’s represent about 70% of Ghana’s GDP and accounts for roughly 92% of businesses in Ghana. Apart from helping to reduce unemployment (one of the serious problems in the Ghanaian economy), SME’s also help to strengthen the industrial linkages and integration by the production of intermediate products as raw materials for large scale companies as well as selling of final goods produced by large scale manufacturing companies. These significant contributions of SME’s coupled with the fact that SME’s can be a catalyst for economic advancement motivated the Government of Ghana to establish the National Board for Small Scale Industries (NBSSI) in 1985 to facilitate the promotion and development of SME’s through loan scheme. It has been documented by many researchers, economists as well as policymakers that access to credit play a significant role in the growth and survival of small-to-medium enterprises including microenterprises. Thus to achieve sustainable economic growth especially in developing countries, one of the strategies is for policy makers to pursue financial sector policies that aim at extending more credit to SME’s.

However, limited access to credit has been identified as one of the main obstacles to the growth and development of SME’s in both the developing and advanced economies. Even the SME’s that get financial assistance normally have low approval rate. In Ghana, a survey by the Association of Ghana Industries (AGI) in 2010 indicated that access to credit is one of the main factors limiting the growth of small businesses, (AGI’s Business Barometer Report, December 2010). This observation might be attributed to the fact that regular banks often focus on highly collateralized investments with low credit risk, which are rarely found in the micro, small and medium enterprises (MSME’s) sector of the economy. Also, most regular
banks are not focusing on the informal operations of the MSME’s of which most are either unregistered or have no proper accounting records which are the basis for client assessment. As a result, many MSME’s do not access credit from the regular banks. Rather, they turn to informal financial services such as microfinance institutions and savings and loans companies.

These situations have well been argued in the financial repression hypotheses and credit rationing theory by [3,4,5]. In the financial repression hypotheses, McKinnon [3] and Shaw [4] maintained that financial market distortions arise as a result of policies such as impositions of deposits and lending rates and directed policies which led to artificial low interest rates, direct credit controls and high reserve requirements. The activities of these formal financial services lead to a fragmented financial market which in turn crowds out the financial needs of the MSME’s. The end result is that these high risk borrowers (MSME’s) do not have access to credit from the formal financial sector but resort to the informal sector which in most times, are woefully inadequate. However, Stiglitz and Weiss [5] asserted that malfunctioning in the financial market is caused by information asymmetry. This compels the financial institutions to adopt non-price strategies such as credit rationing in their credit disbursement in the imperfect market. Again, high risk borrowers (MSME’s) may not access credit as they are considered to be the worse defaulters due to their willingness to pay high interest rate.

Although numerous attempts have been made to address challenges of MSME’s access to credit in literature, the problem still persist in most developing countries including Ghana. The original purposes and the premises as well as the modus operandi by which the informal financial institutions were established appear to be fading out and being progressively replaced by the tenets of the regular banking sector. What is even worsening the situation is that the informal financial institutions such as the savings and loans companies and the microfinance institutions are adopting the strategies of the regular banks to disburse inadequate loans to MSME’s. With these kinds of emerging trends, one could argue that with the passage of time, accessing credit by the MSME’s who are the main targets of informal sector would be adversely affected. Moreover, productivity of SME’s might naturally dwindle due to limited access to credit. In this light, we therefore pose the following separate research questions:

(1) What are the determinants of loan accessibility and (2) What factors influence the actual amount that could be disbursed to a client (MSME’s)?
Many empirical studies have investigated the determinants of credit access. However, these studies are limited to human capital theory or household characteristics such as gender, age, household size, marital status and household income levels. These do not give the perfect picture of the determinants of credit access from banks. Few other studies have concentrated on firm characteristics such as firm’s age and financial characteristics such as stock level, stock turnover and firm’s profits. According to the current knowledge of the authors, there is paucity of empirical evidence in which all three characteristics (i.e. entrepreneur characteristics, firm characteristics and financial characteristics) have been considered together to examine the determinants of access to credit as well as the factors that influence the volume of credit received by the clients (in our case MSME’s). Thus, the contribution of this paper is twofold. Based on data sets from microfinance institution in Kasoa Metropolis, we first examine whether MSME’s have different probabilities to access credit. Secondly, we investigate whether the loan amount they receive is explained by certain determinants. For instance, why does firm A receive greater amount of loan than firm B even though firm B applied for a higher amount than firm A, given that both firms have similar size and capacity. This simultaneous investigation of access to credit and the determinants of loan amount disbursed to MSME’s are limited in the field of credit literature, hence, the study hopes to contribute in filling this gap.

The findings from the study will be of great importance to the Ghanaian policy makers in their quest to strengthen the activities of MSME’s in their effort to eliminate constraints inhibiting the growth of enterprises. The study will also offer insight into the factors inhibiting credit access as well as factors contributing to credit rationing so as to help government and other stakeholders know where to target their efforts in their quest to providing easy access and cheap credit to entrepreneurs. Other significant variables that this paper throws light upon are the volume of sales and incomes from business operations since microeconomic and macroeconomic indicators have bearings on the sales levels of enterprises which in turn influence the volume of credit disbursed by MFI’s. Again, the paper will help entrepreneurs by exposing them to some of the critical issues banks consider in their credit disbursement processes.
The remainder of this paper is organized into four sections. Section two provides both theoretical and empirical literature review. In section three, we provide the methodology that was used in carrying out this work and includes the sampling frame and techniques, data collection procedures as well as analytical techniques. Section four presents the empirical results and discussions. After the discussion of the results, the study ends with conclusions and recommendations for policy and future studies.

1.1 Literature Review

According to Nwaru [6], credit is defined as an instrument whose effectiveness is a function of finance and economics that goes with it. Credit is an input factor and so its demand is a derived demand, that is, borrowers will only demand for credit to help the production of goods and services or for business expansion. Credit can be in kind or in cash. However, this study considers credit in cash. Credit access refers to the absence of price and non-price barriers in the use of financial services. In literature, there are many supporting arguments that appreciate the difficulty of credit access by MSME’s. This can partly be attributed to the fact that most MSME’s lack proper accounting documentation and procedures and most often firm owner’s mix their personal finances with that of the business finances, so financial institutions cannot rely on the business financial statement for assessment.

The financial institutions in Ghana are grouped into three main categories namely, formal, semi-formal and informal. While the formal sector of Ghana’s financial institution is predominantly made up of commercial banks and rural community banks, the semi-formal financial institutions consist of mainly savings and loans companies and microfinance institutions (MFI). The informal financial sector consists of money lenders, family members, friends and the traditional susu system of credit. Most of the formal financial sector (commercial banks) targets the urban middle-income and high income clients (medium and large scale enterprises). However, microfinance institutions concentrate on the micro, small and medium scale enterprises. These semi-formal financial institutions have become the main source of financial resources for MSME’s in Ghana. Hence, they are the main focus of this study.
In Ghana, the most commonly used definitions of MSME’s are based on the number of employees of the enterprise (employment criteria) as defined by [7]. They classified SME’s into four main categories; (i) micro-enterprise – employing less than 6 employees, (ii) very small enterprise – employing between 6 – 9 employees, (iii) small enterprises – employing between 10 and 29 and (iv) medium enterprises – employing 29 – 50 workers. On the other hand, the Ghana Statistical Service (GSS) also defines small enterprises as those with less than 10 employees while those with more than 10 are classified as medium and large enterprises. The study adopts the definition by Osei et al. [7], and therefore defines Micro-Small-Medium enterprises as firms with 1 – 50 workers. This gives a fair representation of the MSME’s employment level in Ghana and ensures that adequate numbers of firms are included in the sample.

In Ghana, most MSME’s are mainly sole proprietorship and partnership form of business where ownership cannot be separated from firm control. This makes it relatively difficult to distinguish household characteristics from business characteristics. Studies on entrepreneurial skills and credit access had focus on household characteristics such as educational level, years of experience, age and gender. Thus, there is a correlation between household characteristics and credit access.

Roslan and Abd Karim [8] asserts that educational level fosters entrepreneurial competency enabling owners to keep proper book records, analyzing business cash flow and make the right decisions. Thus, MSME’s owners with higher level of education are more likely to manage their businesses effectively and efficiently than their counterparts with low level of education. Furthermore, Irwin and Scoth [9] in their study of the barriers faced by SME’s in raising banking finance; found that experienced graduates access credit relatively easier than their counterparts with low level of education.

Entrepreneurial experience plays a vital role in accessing credit from financial institutions. It has been documented that firms with longer years of experience are more likely to have access to credit than those with few years in business. This is because entrepreneurs with longer years in operation are in better positions to repay their loan than beginners. A recent study by Abunyuwah and Blay [10] in assessing the credit constraint conditions of small scale fish farmers in Ghana observed among other things that entrepreneurs with longer years of experience
have higher probability of accessing credit from formal financial institutions than their counterparts with relatively few years of experience in the fishing industry.

Literature on gender and access to credit are quite interesting but have mixed findings. While researchers like Pearson and Greeg [11] contends that financial institutions are inclined to lend to women because of their ability to manage tighter budgets and turn to repay their debt obligations better than men, others like Bennett and Golberg [12] argue that low-income women in developing countries suffer societal suppression and abuse, and their counterparts in developed economies suffer lending discrimination.

Ajagbe et al. [13] in assessing the determinants of small scale enterprise credit demand in Nigeria employed Tobit regression model to identify the factors that influenced credit demand of small scale enterprises in Oyo state, Nigeria. The Tobit regression analysis indicated among other things that age of the entrepreneur has a negative relationship with credit demand. The argument is that as individuals advance in age the less productive they become in economic activities and therefore MFI’s rate such individuals low in terms of repayment capacity which reduces their chances of accessing credit.

Obo and Ekpebu [14] recently examined the determinants of agricultural credit access and allocation among arable crop farmers in Benue state of Nigeria. Using multiple regression analysis, they identified household size, among other socioeconomic and firm-specific variables to be significant factors influencing the amount of credit received by farmers. Kuwornu et al. [15] also observed household size to be a significant determinant of farmer’s access to credit when analyzing the determinants of access to agricultural credit among maize farmers in Ghana.

Atieno [16] identified household income level as one of the significant variables explaining access to formal credits. Furthermore, Oyedele et al. [17] employed Probit model to analyze the determinants of credit constraint conditions in Nigeria and indicated that household size, household expenditure among other variables were significant in explaining credit constraint conditions of farm households.

Firm’s operational characteristics such as firm’s age, volume of sales, level of firm’s stock, stock turnover, collateral security as well as firm’s income have the capacity to influence the volume of credit disbursed. Firm’s duration in business is defined as the absolute number of years of existence since start-ups. A number of
studies have documented a relationship between firm’s age and access to credit. A survey conducted on 133 firms by Aryeeteh et al. [18] reveals that only about 10% of start-up firms in Ghana could obtain loans from the banks. Again, Levy et al. [19] indicated that about 80% of firms in Tanzania and Sri-Lanka with at least six years in operation are able to access loan from banks and other financial institutions.

The value of stock constitutes the accumulation of SME’s wealth and security against emergencies. The value of firm’s stock is an important factor influencing the decisions of credit institutions on how much loan to disburse to SME’s. In the absence of fixed collateral such as land, vehicle or other immovable properties; banks use firm’s capital stock as collateral against any loan amount. Also, firms with high level of capital stock are rated high by banks in terms of repayment capacity than firms with low capital stock value. Sales level is also one of the key indicators financial institutions use to measure the performance of firms. A firm’s level of sales determines how the products of the MSME’s are patronized which in turn determine their repayment capacity. According to Buyinza and Bbaale [20], volume of sales and capital stock are functions of access to and the amount of credit supplied to enterprises. They used Probit and Tobit models to estimate firm’s access to credit and volume of credit disbursed to firms respectively in the Eastern African countries, where they observed a positive significant influence of firm’s sales and capital stock on credit demand and supply.

In the absence of sufficient and accurate financial information probably due to information asymmetry, MFI’s generally rely on high valued collateral security which, according to the MFI’s reduces the probability of default. Thus, collateral security has become a key determinant of access to and amount of credit supplied. For instance, a study by Azende [21] showed that stringent collateral requirements by MFI’s limit MSME’s access to credit. Voordeekers and Steijvers [22] in studying the credit rationing for SME’s in the Belgian economy indicated that about 50% of Belgium enterprises are credit rationed due to lack of collateral.

In developing countries like Ghana, SME’s lack the ability to provide audited financial statements and accounting reports in accordance with prescribed accounting standards. This could partially be attributed to lack of adequate business experience and financial illiteracy level of entrepreneurs. Often, banks tend to rely on bank statements to study the movement of cash in and out of the business. Firms that are able to provide bank statements have higher probability of
obtaining bigger loans than firms with no bank statement. Sometimes, financial institutions require that firms issue cheques against their monthly repayment amount. Ghimire and Abo [23], in analyzing the factors inhibiting the demand for credit by Ivorian SME’s observed that, firms with no financial statements were denied access to loans. Kinditi et al. [24] also noted that loan applicants with no financial documentations were rejected by their banks as there were nothing to show about their future and current performance.

Income from firm’s operations is a key determinant of firm’s access to credit as well as the loan size supplied. Firms with high income level are predicted by financial institutions to have a greater repayment capacity than firms with low income levels. Ibrahim and Alleiro [25] in assessing the determinants of formal credit among farmers in rural areas of Nigeria using Probit regression model noted that increase in the income levels of farmers in Nigeria increases the probability of accessing loans from credit institutions. Similarly, Dainelli et al. [26] reported an increasing function of firm’s income on credit accessibility as well as the size of loan supplied by formal financial institutions.

2. METHODOLOGY

2.1 The Study Area

Kasoa, formerly known as Odupongkpehe, is a peri-urban city in Ghana situated outside the Ghana’s capital city, Accra. Kasoa has territory in three of the twenty Metropolitan, Municipalities and District Assemblies (MMADs) in the central region of Ghana: Awutu Senya district, Ewutu Municipal district and Awutu senya East Municipal Assembly (ASEMA). It is the second largest town in these districts, second only to Winneba. The town is situated along the Accra-Cape Coast road, approximately 36 kilometers, by road, west of Ghana’s Kotoka international Airport. The average elevation of Kasoa is about 75 kilometers above sea level with coordinates: 05 31 12N, 00 28 48W (Latitude: 5.5200; Longitude: 0.4800). Kasoa experiences a seven-month rainy season that lasts from April through to October. During the rainy season, the South West Monsoon winds are very prominent. The rainy season is followed by dry season that last from November to March. The North East Trade winds are very common in the period of the dry season.
Ghana has experienced rapid population growth in the last three decades. This population growth has directly affected Kasoa and its peri-urban areas. Kasoa is reported to be one of the fastest growing communities in West Africa with its estimated population increasing from 34,719 in 2000 to 69,384. Thus, from 2000 – 2010, the population increased by 34,665.

Agriculture and related businesses is one of the leading economic activities for Kasoa’s working population. Crop farming and fishing are very popular economic activities in the lowlands near the coast. Kasoa’s market is the main regional market with traders coming from other communities to trade especially on market days (every Tuesday and Friday). The market is consistently packed and is often difficult for new traders to sell their products because all the stalls in the market become occupied. Agro-processed products are popular commodities at these markets. Some of these products are processed cassava foods popularly known as ‘gari’ and ‘agbelima’. The vibrant economic activities in the Municipality have resulted in the establishments of Microfinance institutions to support the financial capital of these business enterprises which are mainly micro-small-medium scale enterprises.

2.2 Sampling Procedure and Data Collection

The Data used for this empirical study were provided by Progressive Microfinance Co. Ltd, a microfinance institution (MFI) with special focus on MSME’s. The institution operates in Ghana as a fully-fledged microfinance company and it has its head-office in Kwashieman-Accra. The first two of its operations have been very successful and currently run four branch offices in Accra (Kwashieman, Kaneshie, Taifa and Accra central) and a branch office in central region (Kasoa) of Ghana.

All the five branch offices follow the same disbursement procedures. First, the loan request come either directly from the applicant through a loan application form or stimulated by credit officer who may contact the entrepreneur for his eligibility to apply for a loan. The credit officer will then perform a diligent rapid appraisal on the age (the minimum age for eligibility is 18 years), whether the applicant has a running business, type and location of business, residential status of the applicant and how far the business is from the nearest branch of the company. On the average, about 20% of the loan applicants are rejected through the rapid appraisal.
After the loan officer is satisfied with the minimum criteria, the loan officer then continues with a detailed client business assessment. During the assessment of the client business, detailed information regarding the client’s private and business income and expenditures is collected. Moreover, data on business cash flow such as weekly or monthly purchase, sales level, mark-up, stock turnover and the value of stock at the time of visit. All these information are gathered in order to help the credit officer calculate the client’s repayment ability. The third step in the loan disbursement process is for the client to provide an asset to secure the loan. This is called collateral. The collateral can be in the form of vehicle, house or land. Sometimes, the institution may accept client’s business stock as collateral depending on the nature of the stock. The role of the collateral in the credit disbursement process is to serve as a disincentive for borrowers to default. The final step in the disbursement process is the loan amount decision at the credit committee usually made up of a minimum of three members. In the credit committee assessment the credit officer in charge is made to present his assessment on the client and recommend the loan amount and the maturity period based on the assessment. Following a unanimous decision of the credit committee, the loan amount and the maturity may either be fully approved, partly approved (amount reduced) or rejected outright.

The dataset for this study comprises of randomly sampled microloans applications at the Kasoa branch office of the company that have been disbursed and rejected within the Kasoa municipality. Moreover, the study excludes all loans that were rejected by credit officers even before the rapid appraisal process as well as pending loan application yet to be decided on. In all, a total of 140 applicants with fully complete client and loan data were sampled.

2.3 Analytical Framework

In analyzing the sampled dataset, descriptive statistics was employed to summarize the demographic characteristics of the client’s as well as the percentages of credit applied and amount received. The paired-sample t-test was used to test for any significant difference between the volume of credit applied by the MSME’s and the volume of credit actually disbursed to them. The Probit regression model was used to analyze the difference in probability of MSME’s
access to credit. Finally, the Tobit regression model was used to analyze the
difference in the volume of credit supplied to MSME’s.

2.3.1 The paired-sample t-test

Generally, the paired-sample t-test looks at the significant differences between
two samples. The study adopted the paired-sample t-test technique to find out the
degree of association between total amount of loan applied by the MSME’s and
the actual amount supplied to them. The paired t-test is calculated from the formula
below:

$$
t = \frac{\sum d}{\sqrt{\frac{n \sum d^2}{n-1} + \sum d^2}}
$$

Where $\sum d^2$ represents the sum of squared differences, $\sum d^2$ represents the
sum of the differences squared and $n$ is the sample size. As the averages of the
differences gets bigger, the $t$ value gets bigger and the confidence interval enlarges.
However, as the variation in the differences gets bigger, the $t$ value diminishes.

2.3.2 The probit model

In many empirical studies in the field of credit access, a limited dependent
variable model such as Logit or Probit is used (e.g. see [11,27,28,29]). Nagler [30]
indicated that Probit model constraint the estimated probabilities of the dependent
variable to lie between 0 and 1 and relaxes the independent variables as a
constant across probability values of the dependent variable. The Probit model
assumes that apart from the observed values of 0 and 1 for the dependent variable
$Y$, there is a latent unobserved continuous variable $Y^*$ that determines the value of
the dependent variable $Y$. Nagler [30] again maintains that Probit model has the
advantage of plausible error distribution as well as reasonable probabilities. Hence,
the preferred and the commonly used model has been the binary probit. The
dependent variable $Y^*$ is a dichotomous which represent the credit access
condition of the MSME’s and take the values “1” for those who are able to access
credit and “0” otherwise. We assume that $Y^*$ can be specified as follows:
the preferred and the commonly used model has been the binary probit. The access to credit. Finally, the Tobit regression model was used to analyze the two samples. The study adopted the paired-sample t-test technique to find out the differences gets bigger, the t value diminishes. However, as the variation in the differences gets bigger, the t value gets bigger and the confidence interval enlarges.

2.3.2 The probit model

Generally, the paired-sample t-test looks at the significant differences between the samples. The measurements and the a priori expectations of the variables used in the empirical Probit model are presented in Table 1.

Table 1. Description, measurement and a priori expectations of factors affecting MSME’s access to credit

<table>
<thead>
<tr>
<th>Variable description</th>
<th>Measurement</th>
<th>A priori expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of the entrepreneur squared</td>
<td>Years</td>
<td>+ Age</td>
</tr>
<tr>
<td>squared of the entrepreneur</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Gender</td>
<td>Dummy: 1 if male, 0 otherwise</td>
<td>+/-</td>
</tr>
<tr>
<td>Marital status</td>
<td>Dummy: 1 if married, 0 otherwise</td>
<td>+/-</td>
</tr>
<tr>
<td>Educational level</td>
<td>Years of formal education</td>
<td></td>
</tr>
<tr>
<td>+ Household size</td>
<td>Number of people</td>
<td>-</td>
</tr>
<tr>
<td>Duration in business</td>
<td>Years</td>
<td>+</td>
</tr>
<tr>
<td>Personal guarantor</td>
<td>Dummy: 1 if applicant has personal guarantor, 0 otherwise</td>
<td>+</td>
</tr>
<tr>
<td>Permanent place of business</td>
<td>Dummy: 1 if permanent place of business; 0 otherwise</td>
<td>+</td>
</tr>
</tbody>
</table>

2.3.3 The tobit model

In order to investigate why an entrepreneur A may receive bigger volume of credit than entrepreneur B even though B may request for higher amount than A (that is, why different volumes of credit are disbursed to different entrepreneurs), we assume that there is no conditional dependency between credit approval and the volume of credit disbursed.
We therefore estimate the amount of credit disbursed to clients by Tobit model. The Tobit model can be defined as:

\[
Y_i = \begin{cases} 
0 & \text{if } Y_i = 0 \\
\sum_{j=1}^{6} X_{ij} & \text{if } Y_i > 0 
\end{cases}
\]

Where \(Y_i\) denotes the observed dependent variable; \(Y_i\) is latent, \(X_j\) denotes the vector of factors influencing the amount of credit SME’s received by entrepreneur \(j\) denotes vector of unknown parameters, \(i\) is a residual that are independently and normally distributed with zero mean and common variance.

The empirical model for the Tobit model used to estimate the amount of credit disbursed is given by:

\[
K_{M0} + X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + i
\]

Table 3. Demographic distributions of the respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 30</td>
<td>21</td>
<td>15.00</td>
</tr>
<tr>
<td>31 - 40</td>
<td>61</td>
<td>43.57</td>
</tr>
<tr>
<td>41 - 50</td>
<td>36</td>
<td>25.71</td>
</tr>
<tr>
<td>51 - 60</td>
<td>12</td>
<td>8.57</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>10</td>
<td>7.14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>140</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>95</td>
<td>67.86</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>32.14</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>108</td>
<td>77.14</td>
</tr>
<tr>
<td>Otherwise</td>
<td>32</td>
<td>22.86</td>
</tr>
<tr>
<td><strong>Educational Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal</td>
<td>16</td>
<td>11.43</td>
</tr>
<tr>
<td>Primary</td>
<td>16</td>
<td>11.43</td>
</tr>
<tr>
<td>Junior High</td>
<td>48</td>
<td>34.29</td>
</tr>
<tr>
<td>Senior High</td>
<td>53</td>
<td>37.86</td>
</tr>
<tr>
<td>Tertiary</td>
<td>7</td>
<td>5.00</td>
</tr>
</tbody>
</table>
We therefore estimate the amount of credit disbursed to clients by Tobit model. The Tobit model can be defined as

\[
Y_i = \begin{cases} 
Y_i & \text{if } Y_i \leq 0 \\
0 & \text{if } Y_i > 0
\end{cases}
\]

Where \( Y_i \) denotes the observed dependent variable; \( Y_i \) is latent, \( X_j \) denotes the vector of factors influencing the amount of credit \( SM \) received by entrepreneur \( j \) denotes vector of unknown parameters, \( i \) is a residual that are independently and normally distributed with zero mean and common variance.

The empirical model for the Tobit model used to estimate the amount of credit disbursed is given by:

\[
K M_0 X_1 X_2 X_3 X_4 X_5 X_6_ i
\]

Table 3. Demographic distributions of the respondents

<table>
<thead>
<tr>
<th>Household size</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Jan</td>
<td>70</td>
<td>50.00</td>
</tr>
<tr>
<td>6-Apr</td>
<td>65</td>
<td>46.43</td>
</tr>
<tr>
<td>&gt; 6</td>
<td>5</td>
<td>3.57</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 4. Credit constraint conditions of respondents

<table>
<thead>
<tr>
<th>Credit Conditions</th>
<th>Constrained</th>
<th>Unconstrained</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>83</td>
<td>8</td>
<td>91</td>
</tr>
<tr>
<td>Percentage</td>
<td>91.21</td>
<td>8.79</td>
<td>100</td>
</tr>
</tbody>
</table>

With regards to the credit constraint conditions, t-test analyses was used to determine whether there is a significance difference between the amount of credit applied and amount received. The results in Table 5 indicate that the mean value of credit applied (GH¢3,302) is greater than the mean value of credit received (GH¢1,978) at 1% significant level. This means that MSME’s in the study area received about 60% of the volume of credit applied. These amounts are inadequate to the MSME’s and may hinder their investment plans and affect their productivity and income levels. This result is in agreement with the findings of Korwunor et al.

3.2 Credit Constraint Conditions of the MSME’s

Korwunor et al. [15] defined credit constraint as a gap between demand for and supply of credit by the lenders and therefore the wider the gap, the larger the credit constraint conditions. Thus, in this study, a respondent is said to be credit constrained if the volume of credit received is lower than the volume applied. However, if the volume of credit received is just equal to the volume applied, then the respondent is said not to be credit constrained. Table 4 indicates that 83 (91%) out of the 91 respondents whose loans were approved did receive amount less than what they applied for (credit constrained) while only 8 (9%) of the respondents had amount equal to the amount applied (credit unconstrained). This indicates that majority of MSME’s in the study area are credit constrained and this can affect productivity and for that matter business income.

Table 5. Credit constraint conditions of respondents

With regards to the credit constraint conditions, t-test analyses was used to determine whether there is a significance difference between the amount of credit applied and amount received. The results in Table 5 indicate that the mean value of credit applied (GH¢3,302) is greater than the mean value of credit received (GH¢1,978) at 1% significant level. This means that MSME’s in the study area received about 60% of the volume of credit applied. These amounts are inadequate to the MSME’s and may hinder their investment plans and affect their productivity and income levels. This result is in agreement with the findings of Korwunor et al.
[15] and Oboh and Ekpebu [14] who indicated the mean value of credit amount applied is greater than amount received at 1% significant level.

Table 5. Paired t-test results showing the significance difference between credits applied and credit received

<table>
<thead>
<tr>
<th>Loans</th>
<th>Mean</th>
<th>t-value</th>
<th>DF</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Applied</td>
<td>3302</td>
<td>10.3644</td>
<td>90</td>
<td>0.000***</td>
</tr>
<tr>
<td>Amount Received</td>
<td>1978</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significance at 1%

3.3 Factors Influencing the Probability of Receiving Loan

Results for the estimation of the Probit model (Probability of respondent access to loan) are shown in Table 6 below. The maximum likelihood estimates of the Probit regression model indicates that respondents duration in business, household size, educational attainment and the provision of a personal guarantor are significant variables that influence probability of respondents receiving credit.

Coefficient of educational level was found to be positive and significant at 1%. This means that higher level of education is highly associated with probability of accessing loans. The result is in conformity with the earlier findings of Roslan and Karim [8] who reported that education enable entrepreneurs’ to appreciate complex information, book keeping, perform simple cash flow analysis and make better decisions and hence, have higher probability of accessing loans from lenders than those with little or no formal education.

Table 6. Probit regression estimates of factors influencing credit access

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Robust std error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.211</td>
<td>0.182</td>
<td>0.245</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.002</td>
<td>0.002</td>
<td>0.42</td>
</tr>
<tr>
<td>Duration in business</td>
<td>0.529</td>
<td>0.229</td>
<td>0.021**</td>
</tr>
<tr>
<td>Educational level</td>
<td>0.168</td>
<td>0.061</td>
<td>0.006***</td>
</tr>
<tr>
<td>Gender</td>
<td>0.134</td>
<td>0.513</td>
<td>0.794</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.129</td>
<td>0.501</td>
<td>0.797</td>
</tr>
<tr>
<td>Personal guarantor</td>
<td>2.377</td>
<td>0.566</td>
<td>0.000***</td>
</tr>
<tr>
<td>Permanent place of Business</td>
<td>1.756</td>
<td>0.599</td>
<td>0.003***</td>
</tr>
<tr>
<td>Household size</td>
<td>-0.0479</td>
<td>0.026</td>
<td>0.063*</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.675</td>
<td>3.841</td>
<td>0.223</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>Wald chi² (9) 32.93</td>
<td>Prob &gt; chi² 0.0001</td>
<td>Pseudo R² 0.3631</td>
</tr>
</tbody>
</table>

***, **, and * at 1%, 5% and 10% significance level respectively

The finding is also in agreement with Briggeman et al. [31] who found positive relationship between education and the probability of accessing credit.
Entrepreneurs with longer time in business are expected to manage their business better. The results indicated a direct relationship between duration in business and credit access at 5% significance level. Thus, firm’s absolute number of years of existence since start-ups has bearing on the probability of accessing credit from banks and MFI’s. The finding is consistent with the previous study by Woldie et al. [32] in Tanzania who observed that firms at start-ups and less than five years find it difficult to access credit from formal institutions and therefore depend more on informal sources of finance.

Household size plays a significant role in the probability of accessing credit. The study reveals that household size is negatively signed and significant at 10% level of significance. Thus, the larger the household size, the lower the probability of getting the loan application approved. This is contrary to the findings of Weber and Mushoff [33] who found a positive significant influence of household size on credit access. However, our findings confirm the study by Akpan et al. [34] and Idowu et al. [35] who found household size to be a decreasing function of the probability to access credit at 10% and 1% significant levels respectively.

Respondents having a permanent place of business play a key role in accessing credit from both the formal and the informal credit lenders. Entrepreneurs with permanent place of business have greater chance of accessing credit than their counterparts without permanent place of business. Thus, hawkers have low probability of accessing credit. This is revealed by the study as the permanent place of business is positively signed and significant at 1% level of significance. Personal guarantor is positively and significantly related to the probability of credit access at 1% level of significance. This follows our a priori expectation since the guarantor in a way serves as collateral to the loan. Thus, entrepreneurs who provide credible guarantors have greater chance of having their loan approved than entrepreneurs without guarantors.

### 3.4 Factors Influencing the Amount of Credit Disbursed to Respondents

The results of the maximum-likelihood estimates of the Tobit model are presented in Table 7. The Tobit regression results revealed that the availability of collateral security, sales level, and availability of bank statement, level of business income and stock level are significant factors positively influencing the volume of credit disbursed to MSME’s. Collateral has become a key determinant of the
amount of credit disbursed to MSME’s as banks and MFI’s use as an insurance against the probability of default. The availability of collateral security is positively signed and significant at 1% level of significance. This implies that MSME’s with tangible assets that could serve as collaterals have greater chances of receiving larger amount of credit. This result falls in line with a study by Kira [36] who reported a significant positive relationship between the amount of credit demanded and availability of collateral security among Tanzanian SME’s. However, the result contradicts the findings of Akpan et al. [33] who found collateral to relate negatively to the amount of credit disbursed to poultry farmers in Nigeria.

Lenders demand bank statements to enable them determine the liquidity status of the business at every point in time. This is also to cross-check how cash from the business flows in and out as well as to determine the clients savings capacity which partly determines their repayment capacity. Bank statement has positive influence on the volume of credit disbursed and statistically significant at 1% significance level. The result is in agreement with a recent study by Ghimire and Abo [23] who observed that financial statement is a critical determinant of access to and the amount of credit disbursed to SME’s in the Ivorian economy.

The results as shown in Table 7 reveal that firm’s levels of sales have positive bearing on the amount of credit supplied by the lenders. It is statistically significant at 1% level of significance. The results go with the findings by Buyinza and Bbaale [20] who reported that an increase in the level of sales by one unit increases the volume of credit disbursed by 0.7 percentage points, all other things been equal. Thus, firms with larger sales volumes induce credit supply, and microfinance institutions are willing to supply more credit to firms with greater sales than firms with lower sales levels.

Income from business plays a key role in the credit evaluation process of MSME’s. Entrepreneurs with high income from business are likely to have greater amount of loan than their counterparts with small income from business. This is because entrepreneurs with high income levels can sustain their family and are less likely to supplement their family expenditure with a proportion of the loan and hence, banks are more willing to disburse to them higher amount. The results somehow substantiate the works of Weber & Mushoff [32] and Abunywah and Blay [10] who indicated that income from business is a significant increasing function of the amount of loan received. This was also affirmed by Dainelli and Giunta [26] who
indicated that an increase in firm’s income (profitability) increases firm’s ratings and hence, increases the amount of credit received.

Table 7. Tobit regression estimates of factors influencing the volume of credit disbursed

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collateral Security</td>
<td>2612.613</td>
<td>392.455</td>
<td>0.000***</td>
</tr>
<tr>
<td>Duration in Business</td>
<td>26.294</td>
<td>22.720</td>
<td>0.250</td>
</tr>
<tr>
<td>Sales</td>
<td>0.024</td>
<td>0.008</td>
<td>0.005***</td>
</tr>
<tr>
<td>Bank Statement</td>
<td>937.682</td>
<td>444.899</td>
<td>0.006***</td>
</tr>
<tr>
<td>Business Income</td>
<td>0.101</td>
<td>0.052</td>
<td>0.056*</td>
</tr>
<tr>
<td>Stock level</td>
<td>0.169</td>
<td>0.010</td>
<td>0.095*</td>
</tr>
<tr>
<td>Stock turnover</td>
<td>0.119</td>
<td>0.650</td>
<td>0.855</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>91</td>
<td>LR $\chi^2$ (7)</td>
<td>Prob &gt; $\chi^2$ Pseudo $R^2$</td>
</tr>
<tr>
<td></td>
<td>74.54</td>
<td>0.000</td>
<td>0.0532</td>
</tr>
</tbody>
</table>

***, **, and * represent 1%, 5% and 10% significance level

The value of stock constitutes the accumulation of SME’s wealth and security against emergencies. Stocks can also be easily converted to cash if the need arises. Financial institutions also consider the firms level of stock as a substitute for collateral security. The higher the value of firm’s stock level the greater the probability of getting a larger amount of loan. From the Tobit regression results, the firm’s level of stock have positive influence on the amount of credit disbursed and is significant at 10% level of significance. The result is in line with the finding of Buyinza and Bbaale [20] who reported a positive relationship between firm’s level of stock and supply of credit.

Finally, firm’s duration in business defined as the absolute number of years of existence since start-ups as well as the firm’s stock turnover have no statistical influence on the amount of credit disbursed to business enterprises in the Kasoa Municipality.

4. CONCLUSION AND RECOMMENDATIONS

The study sought to analyze the effects of the determinants of MSME’s access to credit as well as the volume of credit disbursed to MSME’s in the Kasoa municipality. The data for this study was elicited from a sample of 140 MSME’s receiving credit from Progressive Microfinance Company Limited, Kasoa branch. Descriptive statistics and the paired sample t-test were used to describe the demographic characteristics of the respondents and test for significant difference between amount applied and amount received respectively. The Probit regression
model was used to analyzed the quantitative effects of factors influencing the probability of MSME’s accessing credit, while Tobit regression model was then used to analyze quantitatively the effects of factors influencing the amount of credit disbursed to the MSME’s.

The results of the paired-sample t-test indicate that the mean value of credit received by the sampled MSME’s was significantly lower than the mean value of credit applied at 1% significant level. The results further revealed that only 9% of the sampled MSME’s were credit unconstrained while 91% were credit constrained. The Probit regression model established that educational level, availability of personal guarantor, permanent place of business, duration in business and household size exert significant influence on the probability of MSME’s accessing loans from the institution. Moreover, estimation from Tobit regression model indicated that volume of sales, collateral security, business income; stock level and availability of bank statement are significant factors influencing the volume of credit disbursed to MSME’s in the study area.

The study therefore recommends that banks and MFI’s should grant MSME’s the required amount of loans to enable them achieve their investment plans, increase productivity and enhance their livelihood, and MSME’s should be encouraged to operate bank accounts since it influence significantly the amount of credit disbursed. Again, the study clearly articulates the significance of firm’s level of sales to the credit market. Therefore, policy implementers should devise policy options that are intended to purge hindrances in both macroeconomic and microeconomic environments that hinder the sales of MSME’s in the country. The study also recommends that credit policy for MSME’s terms and conditions should be formulated to marshal savings and make best use of the availability of credit. The study provides some contributions to the existing literature on credit by enhancing our understanding on factors determining credit access as well as factors determining the size of loan disbursed to MSME’s. The study was conducted in Kasoa municipality only, and the results may not be a representative of the whole country. We therefore suggest that future research could extend to the other parts of the country.
COMPETING INTEREST

Authors have declared that no competing interests exist.

REFERENCES:


Cotton Lint Export Trade in the Midst of Distortion: 
What are the Competitiveness Statuses of Major Players in the Industry? Case of 12 Selected Countries

Abstract: The world’s cotton production and export industry has for some time now witnessed protests from various producers and exporters on distortionary measures (notably subsidies) instilled by some major players (including the United States, India and China) and the downward pressure such measures induce on world cotton prices. To complement research efforts made and findings so far following such protests, we sourced assessment of the competitiveness statuses of twelve major players in the industry amidst such distortions. In so doing, we made use of the logarithmic form of the comparative export performance index (ln (CEP)), basing our decisions on newly introduced thresholds founded on seven-year-mean performance indices. In addition, we used mean deviation for the last four of the seven years covered to identify recessions and improvements in export performance for the respective countries. The results show that, although such distortionary measures (specifically production and export subsidies) are instilled with a purpose of protecting respective local industries, they sometimes turn-out not only harming players from other economies, but also “push-out” extra revenues that may have been earned by some of the countries (primarily larger exporters like United States) that instill them. Based on seven-year mean index values used for the period 2005-2011 and new thresholds employed, we found Burkina Faso, Uzbekistan, Mali, Chad, Benin, Cameroon, and India to be “Highly Competitive”. The United States (US), Australia, and Côte d’Ivoire were found “Competitive”. Upon the index
values observed (limited however by our inability to incorporate economic prices and account for differences in domestic resource costs and market structure), Brazil and China were respectively found “Weakly Competitive” and “Uncompetitive”. In spite of these statuses however, we discovered that export performances for the United States, Uzbekistan, and all the WCA countries (except Burkina Faso) have receded in recent years. Performances for India, Australia, China and Brazil have however improved, with the latter two witnessing relatively higher improvements. By this, we conclude that distortions do not only harm countries from the WCA and other developing nations, but also adversely affect performance of the United States. In countries like India, China and Brazil however, subsidies have yielded beneficial implications for export performance. These differences in effect of subsidies for the four subsidy-levying economies could be due to differences in resource, cost of production and exports, and market share.

**Keywords:** competitive advantage; market share; nominal rate of assistance; thresholds.

1. INTRODUCTION

Agriculture as an activity and sector is not only sensitive to climatic conditions, but it is as well steered by forces operating in the marketing, economic and policy environments. This makes agricultural production and trade fragile. Upon this claim, governments in several countries worldwide have in diverse ways intervened in food and agricultural markets with a purpose of enhancing food security, reducing poverty and increasing foreign exchange earnings. In as much as attempts have been made since the early 1960s to justify such interventions, the instilled measures have been generally welfare reducing both within and beyond the respective economies in which such interventions are witnessed. Revelations along this line of argument can be found in studies such as [1-9]. Other studies including [10] and [11] have however refuted the welfare reducing claims of such interventions (specifically production and export subsidies), arguing that subsidies are primarily instilled as a response to declining world prices to shield farmers and exporters from economic losses. A commodity that has been subjected to such interventions worldwide and has for some time now attracted much research attention is cotton. Its attraction of research attention is justified on the grounds that, in most of the developing economies where the commodity is produced, it is widely regarded a strategic crop for reducing poverty, enhancing food security and founding economic development [12]. In West and Central Africa for example, specifically the C-4 economies (Burkina Faso, Benin, Mali
and Chad), the cotton industry is believed to have as of the year 2005 employed about 16 million people who were engaged in production, processing and trading of the commodity [13]. The industry as revealed by [12] remains second-largest employer after the national governments in the C-4 economies. In these economies, cotton companies are noted to employ at least 4,000 permanent staff and 8,000 seasonal employees. In as much as there are annual variations in these figures, about 900,000 farm units are reportedly engaged in cotton farming [12]. This, according to [12] implies that, the industry provides employment to at least seven million actively farming adults in those units and provides livelihoods to about 13 million people (including children and non-farming adults) that comprise these farming units. In these countries, besides farmers and cotton exporting companies facing various financial, managerial and technological challenges, the farmers (who primarily depend on cotton production for sustenance) are as well subjected to significant production taxes, thereby reducing the share of world price that reach them [14].

In contrast to this observation however, production in the relatively better-off economies have been mostly subsidized. As shown in Fig. 1, cotton production in West and Central African countries has over the period 1980 to 2008 been generally subjected to production tax, whiles completely the opposite was observed for the United States and India. In as much as farmers in Brazil and China were subjected to production tax during the period 1980 to 1995, production in Brazil has since the year 1996 been subjected to some subsidy (although below percentages for India and the United States), with same being noted in China after the year 2004. Besides potentially creating inefficiency in production, through encouraging overproduction, subsidies are believed to create a glut that lowers world prices of the commodity [3,7-9,15]. This adversely affects over 10 million farmers and export companies in the relatively poorer countries (who are rather taxed). In a country like Australia, however, the government has almost been neutral in this case as the annual nominal rate of assistance figures\(^1\) as shown in Fig. 1 lie generally on the zero line.

\(^1\) Nominal rate of assistance (NRA) refers to the percentage by which government policies (subsidies or taxes) have raised (or decreased in case of taxation of farm incomes) gross returns to farmers above (or below) what they would be without such intervention.
Nominal Rate of Assistance for selected countries

Fig. 1. Nominal rate of assistance for cotton output

Data source: Anderson and Nelgen [16]

Following protests by various countries, most importantly the C-4, that subsidies and other trade distortionary measures be abolished, several dimensions of cotton export trade have been researched to help inform policy decisions on the way forward. Among the studies that have investigated various dimensions of cotton export trade are [3, 7, 17-19]. To complement research efforts made and findings so far, we source assessment of the competitiveness statuses of 12 major players in the industry amidst prevailing distortions. The twelve countries covered in this study are the United States, India, Australia, Uzbekistan, Brazil, China, Burkina Faso, Benin, Cameroon, Côte d’Ivoire, Chad and Mali. Selection of these countries is based on the roles they play in world cotton production and trade. With exports of cotton being mostly in the form of lint (e.g. over 83% for C-4 countries), emphasis on cotton exports in this study would solely be placed on the lint component. In assessing the competitiveness of these countries in export of cotton lint, we make use of the logarithmic form of the
comparative performance measure of competitiveness, basing our decisions on new thresholds proposed by [20].

2. DEVELOPMENTS IN WORLD COTTON LINT EXPORTS

Amongst all the known fibres in the world, cotton is the most important with a share of about 40% of production [6] and represents an essential contributor to development in many developed and developing economies around the globe. Cotton as an important cash crop has for over three decades now in its export dimension undergone some major developments at the world, regional and national levels. Both the volume and value of world cotton lint exports have increased tremendously over the period 1980 to 2009, primarily due to overproduction by major players. As shown in Table 1, the volume of cotton lint exports at the global level is noted to have increased from a decadal average of 4,694,604 tonnes in 1980-1989 to 7,166,301 tonnes in 2000-2009 (representing a 1.42% annual growth rate in volume of exports). This development was enhanced possibly by exports from the Americas and Asia, as these two regions are as well noted to have witnessed major increases in volume and value of exports. With volume of world exports increasing by about 52.65% between the two aforementioned periods, volumes from the Americas and Asia increased respectively by 71.59% and 84.76%. These two countries also observed respective annual growth rates of 1.82% and 2.07% in volume of exports. The volume of cotton exports from Africa increased continuously in absolute terms over the three decades between the years 1980 and 2009 (thus 1980-1989, 1990-1999 and 2000-2009), although it fluctuated share-wise. Annual growth rate of 1.62% for volume of exports from Africa was observed over the period. In as much as export volumes from Europe have decreased continuously over the three decades between the years 1980 and 2009, entirely the opposite is observed for Oceania. With volume of exports from Europe decreasing by 61.41% between 1980-1989 and 2000-2009, volumes from Oceania increased by 245.49%. Exports from Europe decreased at a rate of 3.12% per annum over the period, whiles Oceania witnessed a 4.22% annual growth rate in volume of exports.

At country level, the United States remains leading exporter of the commodity over three decades within the period 1980 to 2009. For the respective decades, the United States held shares of 26.71%, 27.39% and 37.50%. Taking a closer look at
figures in Table 1, it is quite evident that the countries outside West and Central Africa (WCA) region are generally major exporters of cotton lint, and this did not happen by chance. Most of the increases observed in export volumes for these countries have been enhanced through government interventions (distortions) in the form of subsidies purported on facilitating increased cotton production [6]. Due to decades of development efforts however, cotton became a dominant cash crop in WCA during the periods 1990-1999 and 2000-2009. Historically, cotton production has two characteristics in Sub-Saharan Africa: vertical coordination and the fact that cotton has been a major export cash crop for decades [21]. These two characteristics led to a strong government intervention in cotton supply chains. With the exception of Chad that witnessed a decrease in export share between the periods 1980-1989 and 2000-2009, all the other WCA countries covered in this study witnessed an increase in share between the two aforementioned periods. In absolute terms however, volumes of export from all the WCA countries increased between the two periods.

Table 1. Regional (and country) shares in volume (tones) of world cotton lint exports

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>4,694,604</td>
<td>5,466,826</td>
<td>7,166,301</td>
<td>1.42</td>
</tr>
<tr>
<td>Americas</td>
<td>1,806,247 (38.47)</td>
<td>1,953,860 (35.74)</td>
<td>3,099,353 (43.25)</td>
<td>1.82</td>
</tr>
<tr>
<td>Asia</td>
<td>1,096,385 (23.35)</td>
<td>1,779,857 (32.56)</td>
<td>2,025,718 (28.27)</td>
<td>2.07</td>
</tr>
<tr>
<td>Africa</td>
<td>721,886 (15.38)</td>
<td>822,330 (15.04)</td>
<td>1,170,418 (16.33)</td>
<td>1.62</td>
</tr>
<tr>
<td>Europe</td>
<td>920,903 (19.62)</td>
<td>464,511 (8.50)</td>
<td>355,401 (4.96)</td>
<td>-3.12</td>
</tr>
<tr>
<td>Oceania</td>
<td>149,183 (3.18)</td>
<td>446,269 (8.16)</td>
<td>515,412 (7.19)</td>
<td>4.22</td>
</tr>
<tr>
<td>Sub-Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Africa</td>
<td>209,186 (4.56)</td>
<td>423,248 (7.74)</td>
<td>651,957 (9.10)</td>
<td>3.86</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>78,430 (1.67)</td>
<td>120,806 (2.21)</td>
<td>129,698 (1.81)</td>
<td>1.69</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>1,254,106 (26.71)</td>
<td>1,497,526 (27.39)</td>
<td>2,687,170 (37.50)</td>
<td>2.57</td>
</tr>
<tr>
<td>India</td>
<td>66,831 (1.42)</td>
<td>124,389 (2.28)</td>
<td>529,804 (7.39)</td>
<td>7.14</td>
</tr>
<tr>
<td>Australia</td>
<td>149,182 (3.18)</td>
<td>446,269 (8.16)</td>
<td>515,411 (7.19)</td>
<td>4.22</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>-</td>
<td>*719,207 (13.16)</td>
<td>727,985 (10.16)</td>
<td>N/A</td>
</tr>
<tr>
<td>Brazil</td>
<td>81,456 (1.74)</td>
<td>32,926 (0.60)</td>
<td>294,467 (4.11)</td>
<td>5.88</td>
</tr>
<tr>
<td>China</td>
<td>310,695 (6.62)</td>
<td>136,569 (2.50)</td>
<td>82,271 (1.5)</td>
<td>-4.33</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>35,254 (0.75)</td>
<td>44,587 (0.82)</td>
<td>162,072 (2.26)</td>
<td>5.22</td>
</tr>
<tr>
<td>Benin</td>
<td>23,086 (0.49)</td>
<td>86,757 (1.59)</td>
<td>128,137 (1.79)</td>
<td>5.88</td>
</tr>
<tr>
<td>Cameroon</td>
<td>29,210 (0.62)</td>
<td>51,947 (0.95)</td>
<td>82,818 (1.16)</td>
<td>3.53</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>59,484 (1.27)</td>
<td>95,932 (1.75)</td>
<td>106,877 (1.49)</td>
<td>1.97</td>
</tr>
<tr>
<td>Chad</td>
<td>37,370 (0.80)</td>
<td>59,000 (1.08)</td>
<td>43,500 (0.61)</td>
<td>0.51</td>
</tr>
<tr>
<td>Mali</td>
<td>61,220 (1.30)</td>
<td>121,543 (2.22)</td>
<td>178,688 (2.49)</td>
<td>3.64</td>
</tr>
</tbody>
</table>

Numbers in bracket are representative shares (percentages), - Data not available, * Decadal average but with missing values for 1990-1991, N/A: cannot be computed due to missing data for the initial value (1980-1989), Source: Authors computation with data from FAO (FAOSTAT–Agricultural Trade Data)

Among the 12 countries covered in this study, annual growth rates in volumes of export were relatively higher for India, Brazil, Benin, Burkina Faso and Australia. As the largest market share holder, the United States observed annual growth rate of
2.57% in volume of exports, whiles China (as the largest producer) observed a 4.33% annual decrease in volume of exports over the period 1980-2009. This could be due to increasing domestic demand for the commodity, as most of the lint produced in China is consumed.

As shown below, Table 2 displays the distribution of export earnings from cotton lint at global, regional and national scales. Globally, earnings from cotton lint exports is noted to have increased from $6,936,064 (thousand) to $8,964,869 (thousand) between the periods 1980-1989 and 2000-2009, representing an increase of 29.25% and annual growth rate of 0.86%. As per the table, the Americas held the largest share of earnings from cotton lint over the three decades between 1980 and 2009. Comparatively, shares in value of exports were significantly higher in non-WCA countries than in WCA countries. West and Central Africa jointly accounted for 10.27% of global export earnings for the period 2000-2009, whiles Africa as a continent/region accounted for 16.53%. By this, West and Central Africa accounted for 62.17% of total earnings from cotton lint exports for Africa.

Table 2. Regional (and country) shares in value ($1000) of world cotton lint exports

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>6,936,064</td>
<td>8,030,049</td>
<td>8,964,869</td>
<td>0.86</td>
</tr>
<tr>
<td>Americas</td>
<td>2,677,418</td>
<td>3,015,909</td>
<td>3,983,130</td>
<td>1.33</td>
</tr>
<tr>
<td>Asia</td>
<td>1,396,768</td>
<td>2,398,208</td>
<td>2,386,746</td>
<td>1.80</td>
</tr>
<tr>
<td>Africa</td>
<td>1,170,422</td>
<td>1,233,388</td>
<td>1,481,620</td>
<td>0.79</td>
</tr>
<tr>
<td>Europe</td>
<td>1,495,956</td>
<td>702,977</td>
<td>441,146</td>
<td>-3.99</td>
</tr>
<tr>
<td>Oceania</td>
<td>195,501</td>
<td>679,567</td>
<td>672,227</td>
<td>4.20</td>
</tr>
<tr>
<td><strong>Sub-region</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Africa</td>
<td>271,444</td>
<td>606,063</td>
<td>765,651</td>
<td>3.52</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>105,436</td>
<td>173,586</td>
<td>155,524</td>
<td>1.30</td>
</tr>
<tr>
<td><strong>Countries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>1,962,283</td>
<td>2,407,539</td>
<td>3,499,019</td>
<td>1.95</td>
</tr>
<tr>
<td>India</td>
<td>88,855</td>
<td>159,845</td>
<td>693,545</td>
<td>7.09</td>
</tr>
<tr>
<td>Australia</td>
<td>195,496</td>
<td>679,566</td>
<td>672,217</td>
<td>4.20</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>-</td>
<td>*972,565</td>
<td>808,791</td>
<td>N/A</td>
</tr>
<tr>
<td>Brazil</td>
<td>78,738</td>
<td>41,612</td>
<td>355,014</td>
<td>5.78</td>
</tr>
<tr>
<td>China</td>
<td>387,828</td>
<td>206,554</td>
<td>101,966</td>
<td>-4.36</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>40,142</td>
<td>58,861</td>
<td>190,414</td>
<td>5.33</td>
</tr>
<tr>
<td>Benin</td>
<td>27,964</td>
<td>124,777</td>
<td>151,016</td>
<td>5.78</td>
</tr>
<tr>
<td>Cameroon</td>
<td>38,164</td>
<td>69,268</td>
<td>100,681</td>
<td>3.29</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>84,036</td>
<td>139,714</td>
<td>123,738</td>
<td>1.30</td>
</tr>
<tr>
<td>Chad</td>
<td>52,771</td>
<td>89,061</td>
<td>51,679</td>
<td>-0.07</td>
</tr>
<tr>
<td>Mali</td>
<td>80,080</td>
<td>166,054</td>
<td>214,715</td>
<td>3.34</td>
</tr>
</tbody>
</table>

*Numbers in bracket are representative shares (percentages). - Data not available, *Decadal average but with missing data for 1990-1991, N/A: cannot be computed due to missing data for the initial value (1980-1989), Source: Authors computation with data from FAO (FAOSTAT–Agricultural Trade Data)*

This comparatively smaller joint share of WCA sub-region in global exports may be attributed partly to unfavorable conditions in the world cotton lint markets and
domestic institutional and structural constraints, mostly with poor price transmission (which discourages farmers from expanding and intensifying production of the commodity). In support of this attribution, [6] revealed that, even though cotton production has expanded rapidly in the WCA sub-region, the share of the international price paid to producers in WCA has been relatively low. In addition, inefficiencies have been noted in other cotton related activities like ginning, marketing and input distribution.

Just as was observed for volume of exports, annual growth rates for value of exports were relatively higher for India, Brazil, Benin, Burkina Faso, and Australia. The United States observed an annual growth rate of 1.95%, whiles China observed a 4.36% annual decrease in value of exports over the period 1980-2009.

3. METHODOLOGY

In this section, we discuss the basic foundations for the measure of competitiveness employed in our analysis and the data used. We begin the section with discussion on the relevant foundations and thereafter provide brief information on data used and sources.

3.1 Measuring Competitiveness

Diverse opinions have been expressed in business and trade literature by experts on the definition of competitiveness and how best the concept can be measured. In this study however, we stick to the definition proposed by [22], who defines competitiveness as the ability of a country (a firm/or an entity) to offer products and services that meet local and international quality standards, worth domestic and global market prices and provide adequate returns on the resources used in producing them. By this definition, the term competitiveness covers four important aspects of trade and production; quantity (through offering of adequate volumes of a commodity), quality, price and efficiency. To be competitive in a commodity, a country (firm/entity) is expected to offer adequate quantity of that commodity in high quality (which attracts higher demand). This consequently sets ground for higher prices (and possibly premium3). In as much as the quality and price aspects are important, the concept by the definition above tries to draw the reader’s attention to the fact that achieving anticipated quality standards and high prices involves efficient production, processing and marketing in the first place. These four dimensions should hold for a country/firm to be deemed competitive in a commodity both at the local and global
scales. As a relative measure of performance, the most important index amongst the lot that comes to mind in expressing competitiveness is the Balassa index. Since the proposition of this index by [23], its definition has been revised and modified in several ways, leading to a plethora of measures [24]. By its original definition however, the Balassa index (also dubbed ‘Revealed Comparative Advantage’ (RCA)) is expressed as follows.

Where X represents exports, i is a country, j is a commodity, t is a set of commodities and n is a set of countries. Blurrily perceived by most trade analysts and experts as a measure of comparative advantage, the definition of this index reflects success or failure of countries in exports of a commodity relative to world-wide norms [25]. Such successes and failures are mostly induced through subsidies and other distortionary measures or incentives. Thus, the index better reflects competitive advantage than comparative advantage. By the original definition as proposed by [23], the index is therefore more of a measure of competitive advantage than comparative advantage. Further derivations from this index will henceforth be a reflection of competitive advantage. In spite of being the foundation for development of various indices of competitiveness, the Balassa index is foremost flawed by deviation in index value observed as the set of countries used as reference changes. This makes the outcomes context and reference specific and sensitive to reference definition. The asymmetric nature of the index poses another flaw in its use. Should a country be found uncompetitive, the index value for such country ranges between zero and value less than 1. For competitive countries, the index ranges from one to infinity. The index is as well susceptible to double counting between pairs of countries. It is as well criticized for ignoring the import side of trade.

In building on this index and addressing identified flaws in the process, [26] offered three alternative specifications. The first among the alternative is the logarithm of relative export advantage (ln (RXA), which holds a definition similar to the original Balassa index but uses the world as a reference to avoid double counting between pairs of countries and addresses the asymmetry problem of the Balassa index). The other two alternatives are relative trade advantage ((RTA), which incorporates both the export and import (relative import advantage (RMA)) dimensions of trade) and revealed competitiveness ((RC), which holds a definition similar to the RTA but uses the logarithms of relative export and import advantages). The respective alternatives are expressed as follows.
Where $X$ represents export, $M$ represents import, $i$ represents country, $j$ stands for commodity, $n$ represents world and $t$ stands for all product groups.

Following the proposition by [26] of these alternatives however, claims have been made in trade literature on the failure of either alternatives to appropriately correct for/capture the effect of government intervention and other distortionary measures on trade. Prior to proposition of these alternatives, [27] found that a country’s performance in exports of a commodity is more affected by economic fundamentals than by government intervention, whereas the reverse holds for import behavior. Along this argument, [26] recommended the use of the $\ln(RXA)$ and $RXA$ in preference to the RTA and RC as appropriate measures for assessing exports performance. This recommendation is backed by a suggestion that the $\ln(RXA)$ and $RXA$ are less susceptible to policy-induced distortions. In addition to this suggestion, considering a single commodity, it is noted that most countries engage either in inter-industry trading (thus complete exports or imports) or irregularly/weakly engage in intra-industry trading. This could to a greater extent preclude the use of the RTA and RC as these measures may automatically converge to either $RXA$, $RMA$, $\ln(RXA)$ or $\ln(RMA)$ when there are zero imports or exports.

Along this line, our analysis is founded primarily on the $\ln(RXA)$ measure (which addresses the asymmetry problem of the RCA) of competitiveness. Although $\ln(RXA)$ is deemed more appropriate among the two alternatives recommended by [26], cross-sectorial distortions stand determining the outcome of the final index values observed. This could lead to misleading outcome for the index values observed. This claim is made on the grounds that, by the definition in eq. (2), in determining the performance of a country in exports of a commodity, use is made of “all product groups” as a divisor both at the national and world levels. To avoid such cross-sectorial influence, we make use of a more sector bound version of the $\ln(RXA)$ measure of competitiveness. By this, we use the logarithmic form of the Comparative Export Performance Index ($\ln(CEP)$). This measure is expressed as follows:

Where conceptually $X$ represents value of exports, $i$ represents country, $j$ stands for cotton lint, $n$ represents world and $t$ stands for value of total agricultural exports. Like the $\ln(RXA)$, $\ln(CEP)$ yields values that are symmetric through the origin. In addition, the $\ln$ (CEP) measure holds a similar index interpretation as the $\ln(RXA)$, where index value $\geq 0$ reveal competitiveness. Noted in trade literature, in informing decision on the competitiveness status of a country in export of commo-
quences, use has been made by several researchers of fewer randomly selected years (usually two or three years including [28]). In their study on “Market analysis and revealed comparative advantage”, [28] had an RCA value of 1.0 in Kiwifruit for Iran in the year 2000, 23.3 in the year 2005 and N/A for the year 2009. Should the value for 2009 have turned out to be for example a value less than 1, what interpretation would analysts attach to such outcome? We believe, as usual, they would suggest the country is no more competitive based on the annual figures on which they base their decision. There could have been a possibility that values for the years between 2001-2004 and 2006-2008 were all above 1 or possibly below 1. Ignoring all these possibilities as we inform decision on the competitiveness statuses of countries could be misleading. Along this line, we make use of mean index values for the last seven continuous years (for which data is available) (2005-2011 for this study) in informing competitiveness statuses of the respective countries instead of using random years. This helps capture extremes (which usually mislead analysts who use annual figures for random periods) and their effect on preceding and subsequent years. Use of the $< \geq 0$ bounds of the ln(CEP) in interpreting outcomes is deemed less informative and provides no room for accessing the effectiveness of policy measures purported on enhancing or depressing exports. Accordingly we make use of seven-year-mean index thresholds proposed by [20] for informing decisions in this study.

Table 3. Seven-year-mean index thresholds for assessing competitive advantage

<table>
<thead>
<tr>
<th>Classes</th>
<th>CEP</th>
<th>Ln (CEP)</th>
<th>SCEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly competitive</td>
<td>$\geq 4.20$</td>
<td>$\geq 1.44$</td>
<td>0.62-1.00</td>
</tr>
<tr>
<td>Competitive</td>
<td>1.73–4.19</td>
<td>0.55-1.43</td>
<td>0.27–0.61</td>
</tr>
<tr>
<td>Weakly competitive</td>
<td>1.00–1.72</td>
<td>0.00–0.54</td>
<td>0.00–0.26</td>
</tr>
<tr>
<td>Uncompetitive</td>
<td>$&lt; 1.00$</td>
<td>$&lt; 0.00$</td>
<td>$&lt; 0.00$</td>
</tr>
</tbody>
</table>

**Source:** [20]

Having been used already by [20] in assessing the performance of exports for seven agricultural commodities during and after the agricultural diversification project in Ghana, these thresholds were not just randomly selected. The bounds were set at the respective upper and lower limits after several rotations for robustness. By this, for a country to move from one class to another would require some efforts in the form of efficient policy instruments, reduction of existing inefficiencies, improvement in trade (including appropriate liberalization of internal and external marketing) and minimization of distortionary measures which according to [29] reduces competitiveness. Although applied to the agricultural sector, these thresholds are valid for other
sectors as long as definition for the measure used conforms to that in eq. (6) and is sector bound. When used in policy analysis, the thresholds could serve as useful guide in evaluating the effectiveness of various policy instruments purposed on enhancing export growth. Besides being quite effective in reflecting fragileness of export trade, these thresholds could be used to identify inefficiencies in export trade in less diversified and highly trade distorting environments and sectors.

To however assess improvements or recessions in performance of the respective countries over the seven year period, we use mean deviation for the four latter years of the seven. Employed in this study, the mean deviation in performance is defined as follows:

\[ \text{eq.(}) \]

The number “4” in the denominator reflects the fact that, we are considering only the four current annual performance figures (2008-2011). This number is deemed appropriate because it does not only cover more than 50% of the entire period (7 years), but also reflects performance for the four recent years for which data is available.

3.2 Data and Sources

In this study, use is made primarily of secondary data on national and world values for cotton lint and total agricultural exports. Data on these variables were gathered from the agricultural trade database of FAO (FAOSTAT). A total of 12 countries are covered in our analysis and these are the United States (US), India, Australia, Uzbekistan, Brazil, China, Burkina Faso, Benin, Cameroon, Côte d’Ivoire, Chad and Mali. The mean index for the respective countries covers all years from 2005 to 2011.

4. RESULTS AND DISCUSSION

By the thresholds employed in this study, and the mean performance indices observed, the twelve countries are placed in four distinct classes. The classes used are “Highly Competitive”, “Competitive”, “Weakly Competitive” and “Uncompetitive”. In as much as these classes provide indications for the competitiveness statuses of the respective countries, they give no further information on any improvement or recession in performance over the period. To provide a clearer picture on both the competitiveness statuses of the countries and how they have performed in recent years, use is made of both the thresholds for classification and a four-year mean deviation to inform decisions on improvements or recessions in performance. Given the classes, countries with mean index values of ≥1.44 are deemed “Highly Competitive”. Those
with mean values between 0.55-1.43 are deemed “Competitive”, between 0.00-0.54 deemed “Weakly Competitive” and <0.00 deemed “Uncompetitive”. The use of the term “Weakly Competitive” is to reflect the fragileness of being in this category. Inappropriate policy interventions, shocks from the market, inefficiencies in fiscal and marketing environment and other socio-economic, financial and structural constraints on the part of producers and exporters could pull a country into the “Uncompetitive” class.

Favorable conditions can as well push a country into a higher class (Possibly the “Competitive” class or “Highly Competitive” class if such conditions are extremely favorable). The use of “Competitive” for the next class is to reflect the fact that, although countries in this category are by the original bounds of the RCA (of Balassa) deemed competitive, there exists room for improvement by addressing some existing inefficiencies in their respective industries and lending more attention to the industry in a non-distorting way. Although such countries are usually less concentrated on the cotton industry, addressing prevailing inhibition to export growth and performance could lead to their movement into the “Highly Competitive” class. Countries in the “Highly Competitive” class are usually more dependent on cotton industry for sustenance, income generation, poverty reduction and foreign exchange earnings, and are potentially low cost producers due to abundance of relevant resources needed and low wage rates, the latter of which violates national labor law prescriptions.

Table 4. Performance of selected countries in cotton lint exports

<table>
<thead>
<tr>
<th>Countries</th>
<th>Log of comparative export performance index, ln(CEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>United States</td>
<td>1.36</td>
</tr>
<tr>
<td>India</td>
<td>1.53</td>
</tr>
<tr>
<td>Australia</td>
<td>0.91</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>3.91</td>
</tr>
<tr>
<td>Brazil</td>
<td>-0.05</td>
</tr>
<tr>
<td>China</td>
<td>-2.67</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>3.91</td>
</tr>
<tr>
<td>Benin</td>
<td>3.74</td>
</tr>
<tr>
<td>Cameroon</td>
<td>2.66</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>1.10</td>
</tr>
<tr>
<td>Chad</td>
<td>3.46</td>
</tr>
<tr>
<td>Mali</td>
<td>3.98</td>
</tr>
</tbody>
</table>

Source: Authors computation with data from FAOSTAT

In interpreting the results as shown in Table 4, we note relatively higher mean index values in countries like Burkina Faso, Uzbekistan, Mali, Chad, Benin, Cameroon and India. By this, all the “Cotton-Four” countries, in-spite of the current challenges
faced by their respective cotton industries are noted to have higher competitive advantage over countries like United States (which holds a market share of over 3 times that of West and Central Africa together), Australia, Côte d'Ivoire, Brazil and China. The higher competitiveness indices observed for the C-4 countries can be attributed to their relatively lower cost of production (due to abundance of labor/farm hands and low wage rates) and exports compared to the US and other countries (like China) which have relatively higher cost of production and exports. In as much as cotton may be subsidized in the US and other major exporting nations like India, reduction in world prices as a result of such intervention does not only harm producers and exporters in developing economies, but also, it reduces potential earnings to the major exporters that levy such subsidies. Given the fact that China remains the major export destination for majority of the countries considered in this study and it being among the leading producers, stockholders and consumers, flooding the Chinese market with “cheap cotton” further lowers prices on the world market and reduces any potential gains that could have accrued to the US and India (who respectively accounted for 35.3% and 30.7% of cotton imports in China for the year 2010 [17]) in the absence of such interventions.

Flooding major destination markets with cheap cotton also yield detrimental implications on earnings for other competing nations especially countries from WCA and Uzbekistan.

Taking a closer look at the detailed world trade flows in Appendix 1, the US is noted to have had about 46 export destinations during the period 2006-2010 compared to about 17 on average for West and Central African cotton exports. Consequently, flooding the market with “cheap cotton” due to overproduction could harm competing nations who share common destination markets with the US, and also preclude the US from realizing any potential gains from increment in prices and export earnings. By the definition of the competitiveness measure employed (as specified in eq. 6), competitive advantage is measured by the value of cotton lint exports in total agricultural exports for the country compared to that for the world (the latter being a divisor). Upon this definition, putting in place measures to increase the national value (and not volume) for exports of the commodity, may induce a relatively higher effect at the national level than at the world level, thereby increasing the numerator in the equation for the US and cotton market distorting nations. Subsidizing cotton production and exports for major exporters could induce an inverse association
between exports and competitiveness for the countries that initiates such intervention and has as well adverse implications for other economically-constrained and cotton production-and-export-dependent countries. Allowing the world cotton market to work things out by itself with reduced government interference could make the US and other cotton market distorting countries better off than they actually now are. For example, in simulating the effect of full liberalization of textile trade, [2] revealed that elimination of subsidies could raise cotton prices by 10.7 percent. Although such realization could to some extent reduce cotton production, the general welfare effect may be positive for majority of the exporting nations including the US. Although the primary goal for use of such interventions is to protect producers and exporters in the country that instills them, in comparing market shares and the index values for the US and other countries, we believe such interventions rather “push-out” extra revenue the country may have earned in their absence.

Using the seven-year-mean index values and bounds from Table 3, in a descending order as shown in Table 5, Burkina Faso, Uzbekistan, Mali, Chad, Benin, Cameroon, and India are found “Highly Competitive”. The United States, Australia and Côte d’Ivoire are found “Competitive”. Although limited by our inability to incorporate economic prices and account for differences in domestic resource costs and market structure, the output obtained from computation of eq (6) reveals that Brazil is “Weakly Competitive” and China “Uncompetitive” in cotton lint exports. The later observation is in part attributed to the relatively lower engagement of China in cotton lint exports. As shown in Appendix 2, cotton lint exports accounted for only 0.17% of value for total agricultural exports from China.

<table>
<thead>
<tr>
<th>Classes</th>
<th>Thresholds</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly Competitive</td>
<td>(≥1.44)</td>
<td>Burkina Faso, Uzbekistan, Mali, Chad, Benin, Cameroon, India,</td>
</tr>
<tr>
<td>Competitive</td>
<td>(0.55-1.43)</td>
<td>United States, Australia, Côte d’Ivoire</td>
</tr>
<tr>
<td>Weakly competitive</td>
<td>(0.00–0.54)</td>
<td>Brazil</td>
</tr>
<tr>
<td>Uncompetitive</td>
<td>(&lt;0.00)</td>
<td>China</td>
</tr>
</tbody>
</table>

Source: Authors classification based on thresholds proposed by [20]

In spite of these statuses however, as shown in Table 6, we note that although “Weakly Competitive” and “Uncompetitive” by status (based on the thresholds), Brazil and China respectively observed the highest improvement in performance over the period 2008-2011, with deviations from the mean being all positive for China, and
positive in three out of four occasions for Brazil. In as much as the mean deviation in performance for Brazil was 0.18 during the aforementioned period, that for China was 0.14. Countries like India and Australia also observed respective positive mean deviations of 0.07 and 0.09. Although mostly within the “Highly Competitive” class, with the exception of Burkina Faso which observed a positive mean deviation of 0.02 (reflecting an improvement in export performance over the period 2008-2011), all the other countries from West and Central Africa covered in this study witnessed recession in performance over the period 2008-2011. Cameroon, Côte d’Ivoire and Benin performed poorer than countries like Mali and Chad. Having held over 37% by volume and 39% by value of world market share, the US is as well noted to have observed a recession in export performance. This outcome reflects inefficiencies in the international market and in current production and exports for most of the countries in the “Competitive” and “Highly Competitive” classes. Although initially poor performers (based on annual ln(CEP) figures for the years 2005, 2006 and 2007), Brazil and China have since the global commodities crisis of the year 2008 witnessed some major improvements in their cotton lint export performance. Being the most fragile amongst the lot based on the seven-year-mean ln(CEP) index however, Brazil needs to firmly anchor, sustain and/or improve upon measures that have ensured current improvements in the country’s performance and address any existing inefficiencies. Such initiative could shield the Brazilian cotton lint industry from future shocks which may counter the positive paths the industry has been set on since the year 2008.

Table 6. Current improvements and recessions in export performance

<table>
<thead>
<tr>
<th>Countries</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>0.14</td>
<td>-0.09</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>India</td>
<td>-0.63</td>
<td>0.55</td>
<td>0.40</td>
<td>-0.06</td>
<td>0.07</td>
</tr>
<tr>
<td>Australia</td>
<td>-0.32</td>
<td>-0.14</td>
<td>0.13</td>
<td>0.69</td>
<td>0.09</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>0.35</td>
<td>-0.10</td>
<td>0.01</td>
<td>-0.46</td>
<td>-0.05</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.28</td>
<td>0.28</td>
<td>-0.03</td>
<td>0.20</td>
<td>0.18</td>
</tr>
<tr>
<td>China</td>
<td>0.18</td>
<td>0.17</td>
<td>0.09</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>0.43</td>
<td>0.27</td>
<td>-0.17</td>
<td>-0.46</td>
<td>0.02</td>
</tr>
<tr>
<td>Benin</td>
<td>0.42</td>
<td>0.07</td>
<td>-0.62</td>
<td>-0.57</td>
<td>-0.18</td>
</tr>
<tr>
<td>Cameroon</td>
<td>-0.13</td>
<td>0.05</td>
<td>-0.52</td>
<td>-0.35</td>
<td>-0.24</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>0.04</td>
<td>-0.31</td>
<td>-0.13</td>
<td>-0.38</td>
<td>-0.20</td>
</tr>
<tr>
<td>Chad</td>
<td>0.24</td>
<td>-0.04</td>
<td>-0.48</td>
<td>0.03</td>
<td>-0.06</td>
</tr>
<tr>
<td>Mali</td>
<td>0.32</td>
<td>-0.13</td>
<td>-0.28</td>
<td>-0.13</td>
<td>-0.06</td>
</tr>
</tbody>
</table>

Shades: Grey—positive annual deviation from mean, Orange—recession in performance, Blue—improvement in performance.
5. LIMITATION OF STUDY

As advised by [3], the structure of world market for cotton lint is a key determinant of growth in production and export of the commodity. In addition, the analysis of developments in the industry is guided by several assumptions, with each having potentially different implications for export growth and performance. In assuming a perfectly fragmented market as against the rigid homogeneous global market for cotton assumption, [3] place a proposition that countries only stand benefiting from reductions in subsidies if they are already competing in segments of the market where production is currently subsidized (as is the case in this study), adding that, this has relevant implications for developments in cotton price and for the distribution of benefits. Determination of the ability of countries to respond to developments in global trade and the influence of such responses on their performance to a greater extent requires effective consideration of their production and export structure including issues with domestic resource costs, market structure, economic prices and existing government policies on production and trade. In using the logarithmic form of the comparative export performance index and deviations from mean index in this study however, we are unable to appropriately account for influences from these development and trade indicators.

6. CONCLUSION

Following recent debates in economic and trade literature on distortions in world cotton industry and their impacts on producers and exporters in developing economies, we sourced assessment of the competitiveness statuses of twelve major players in the global cotton industry. Along this line, we made use of seven-year-mean index values as against the fewer randomly selected years used by various analysts in trade literature. Our ultimate decision on the respective statuses was however based on new thresholds proposed by [20], and according to the four unique classes therein. In addition, we used mean deviation for the last four of the seven years covered to identify recessions and improvements in export performance for the respective countries. The results show that, although such distortionary measures (specifically production and export subsidies) are instilled with a purpose of protecting respective local industries, they sometimes turn-out not only harming players from other economies, but also “push-out” extra revenues that may have been earned by some of the countries (primarily larger exporters like United States) that instill them. Based on seven-
year-mean index values used for the period 2005-2011 and new thresholds employed, we found Burkina Faso, Uzbekistan, Mali, Chad, Benin, Cameroon, and India to be “Highly Competitive”. The United States (US), Australia, and Côte d’Ivoire were found “Competitive”. Upon the index values observed (limited however by our inability to incorporate economic prices and account for differences in domestic resource costs and market structure), Brazil and China were respectively found “Weakly Competitive” and “Uncompetitive”. In spite of these statuses however, we discovered that export performances for the United States, Uzbekistan, and all the WCA countries (except Burkina Faso) have receded in recent years. Performances for India, Australia, China and Brazil have however improved, with the latter two witnessing relatively higher improvements. By this, we conclude that distortions do not only harm countries from the WCA and other developing nations, but also adversely affect performance of the United States. In countries like India, China and Brazil however, subsidies have yielded beneficial implications for export performance. These differences in effect of subsidies for the four subsidy-levying economies could be due to differences in resource, cost of production and exports, and market share.

COMPETING INTERESTS
Authors have declared that no competing interests exist.

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12. IFDC. Linking cotton and food security in the Cotton-Four (C-4) countries. IFDC Report. 2013;38(1).


## APPENDIX

### Appendix 1. Detailed world trade flows for cotton lint exports

<table>
<thead>
<tr>
<th>Country</th>
<th>Export destinations for the period 2006-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between 0% and 1%</td>
</tr>
<tr>
<td>United States</td>
<td>Canada, Brazil, Venezuela, Colombia, Ecuador, Peru, Bolivia, Argentina, Chile, Iceland, United Kingdom, Norway, Finland, Russian Federation, Poland, Germany, France, Belgium, Netherlands, Spain, Italy, Switzerland, Morocco, Senegal, Liberia, Togo, Tunisia, Egypt, Saudi Arabia, Congo DR, Angola, Pakistan, India, Cambodia, Malaysia, Philippines, Japan, Australia, New Zealand</td>
</tr>
<tr>
<td>India</td>
<td>United States, South Africa, Togo, Congo Republic, Tanzania, Kenya, Eritrea, Saudi Arabia, Oman, Turkey, Greece, Italy, France, Germany, Belgium, Netherlands, France, United Kingdom, Nepal, Thailand, Malaysia, Japan, Korea Republic</td>
</tr>
<tr>
<td>Australia</td>
<td>India, Brazil, United States, Pakistan, Turkey, Italy, Malaysia, Philippines</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>United States, Venezuela, Ecuador, Bolivia, Paraguay, Chile, Thailand, Vietnam, Japan, Bangladesh, Turkey, Argentina</td>
</tr>
</tbody>
</table>
### Appendix 2. Share of cotton lint by value in total agricultural exports (%)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Share of cotton lint exports by value in total agricultural exports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>World</td>
<td>1.54</td>
</tr>
<tr>
<td>United States</td>
<td>6.00</td>
</tr>
<tr>
<td>India</td>
<td>7.09</td>
</tr>
<tr>
<td>Australia</td>
<td>3.84</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>77.14</td>
</tr>
<tr>
<td>Brazil</td>
<td>1.46</td>
</tr>
<tr>
<td>China</td>
<td>0.11</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>76.40</td>
</tr>
<tr>
<td>Benin</td>
<td>64.46</td>
</tr>
<tr>
<td>Cameroon</td>
<td>22.04</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>4.63</td>
</tr>
<tr>
<td>Chad</td>
<td>49.06</td>
</tr>
<tr>
<td>Mali</td>
<td>82.28</td>
</tr>
</tbody>
</table>

---

**Table 1**: Export destinations for the period 2006-2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Export destinations for the period 2006-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Nigeria, India, Pakistan, Bangladesh, Myanmar, Indonesia, Thailand, Vietnam, Japan, Korea Republic</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Togo, France, Belgium, Netherlands, United Kingdom, Switzerland</td>
</tr>
<tr>
<td>Benin</td>
<td>Pakistan, Indonesia, Malaysia, Thailand, Vietnam, Portugal, China</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Nigeria, Morocco, Portugal, France, Germany, Belgium, Italy, Greece, Bulgaria, United Arab Emirates, Pakistan, India, Japan</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>Philippines, United Area Emirates, Ghana, Morocco, Portugal, Spain, Tunisia, France, Germany, Belgium, Greece, Italy, Malaysia, Thailand, Bangladesh, China, Indonesia, Vietnam</td>
</tr>
<tr>
<td>Chad</td>
<td>Japan, Indonesia, Thailand, Vietnam, Bangladesh, India, Pakistan, Togo, Cote d’Ivoire, Morocco</td>
</tr>
<tr>
<td>Mali</td>
<td>Malaysia, Tunisia, Portugal, Italy, France, Germany, Netherlands, China, Senegal</td>
</tr>
</tbody>
</table>

---

A social enterprise is that it functions for a social purpose. However, the social aims described as follows [7]:

Social enterpreneurship, social values and social impact

Keywords:

- enterprise orientation
- social enterprises
- social entrepreneurship
- social values
- social impact

The paper presents some of the key implications on social enterprises are directly involved in the

---

**Table 2**: Export destinations for the period 2006-2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Export destinations for the period 2006-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Nigeria, India, Pakistan, Bangladesh, Myanmar, Indonesia, Thailand, Vietnam, Japan, Korea Republic</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Togo, France, Belgium, Netherlands, United Kingdom, Switzerland</td>
</tr>
<tr>
<td>Benin</td>
<td>Pakistan, Indonesia, Malaysia, Thailand, Vietnam, Portugal, China</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Nigeria, Morocco, Portugal, France, Germany, Belgium, Italy, Greece, Bulgaria, United Arab Emirates, Pakistan, India, Japan</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>Philippines, United Area Emirates, Ghana, Morocco, Portugal, Spain, Tunisia, France, Germany, Belgium, Greece, Italy, Malaysia, Thailand, Bangladesh, China, Indonesia, Vietnam</td>
</tr>
<tr>
<td>Chad</td>
<td>Japan, Indonesia, Thailand, Vietnam, Bangladesh, India, Pakistan, Togo, Cote d’Ivoire, Morocco</td>
</tr>
<tr>
<td>Mali</td>
<td>Malaysia, Tunisia, Portugal, Italy, France, Germany, Netherlands, China, Senegal</td>
</tr>
</tbody>
</table>
**Social entrepreneurship, social values and social impact**

**Abstract:** The paper presents some of the key implications on social enterprises and social entrepreneurship. Social entrepreneurs are presented in the context of social economy and social entrepreneurship. Different types of social enterprises are considered and main conclusions on the business model and the principles under which they operate are made.

**Keywords:** social economy, social enterprise, social entrepreneur, social entrepreneurship.

**I. Introduction**

The social enterprise is a different way of doing business. The main feature of a social enterprise is that it functions for a social purpose. However, the social aims come along with the commercial activities regarding their importance and that combination is often called “double-bottom line”. Being a business in its nature, the social enterprise’s activities are targeted to the generation of income trading goods and services. Furthermore, the social enterprise is distinguished by the added value of using the profit to maximize social, community or environmental benefits [2].

The common characteristics of different types of social enterprises are described as follows [7]:

- **enterprise orientation** – social enterprises are directly involved in the production of goods and the provision of services to the market striving after making profit;
- **social aims** – social enterprises have social aims as job creation, social inclusion, training and provision of local services, etc. staying upon ethical values including the commitment to local capacity building and responsibility before the members and the wider community for the social, environmental and economic impact they have;

- **social ownership** – social enterprises are autonomous organizations which governance and ownership is based on structures with participation of stakeholder groups (users or clients, local community groups, etc.) using profit for the benefit of the community.

Social enterprises are a tool to gather people to implement market-based ventures in order to achieve social goals. They possess creativity, entrepreneurship and are focused on community rather than individual profit, i.e. creative endeavors resulting in social, financial, service, educational, employment or other community benefits [10].

Social enterprises are diverse. They could be local community enterprises, social organizations, mutual organizations such as co-operatives or large-scale organizations operating nationally or internationally. A single legal model for the social enterprise is not present. The point that unites them is the commitment to the social and financial double bottom line, and even one more – environmental. Social enterprises could start as businesses or they could be organizations in transition from voluntary, dependent largely on grants and volunteers, to trading for income increase. They could include companies limited by guarantee, industrial and provident societies, companies limited by shares; some organizations are unincorporated and others are registered charities [8].

Some of the key findings are outlined in the consideration of social enterprises’ role in international development [1]. The first one is that the social enterprises’ scale varies much as it was already mentioned. Second, social enterprises are about impacts and the impacts could be found in different ways and forms regarding goods produced or services delivered, business models, etc. Third, social enterprises are in the best position to work with local communities for solving local problems.

Social enterprises are flexible and the approaches they use underpin a long-lasting effect in society. Let’s take for an example employment-generating or skills development enterprises working for the benefit of some vulnerable groups for social
inclusion. Moreover, being supported by governments social enterprises stay in the
focus of social opinion and interest of global charities and non-governmental
organizations.

Three broad elements are accepted as peculiar for social enterprises which
can help in the identification of their unique features [10]:

- Social enterprises exist to create benefits for community – very often they
  start and function because of very particular local circumstances or more widely
  spread social issues, e.g. lack of employment opportunities for some vulnerable
  groups.

- Social enterprises are built upon mutuality and self help – they are about
  people creating opportunities for themselves and others, i.e. their fundamental focus
  is on the community: creating wealth, creating or retaining jobs, increasing people’s
  skills and capacity for employment, etc.

- Social enterprises apply sound commercial practices for the creation of
  wealth and opportunity for community benefit, i.e. social enterprises are businesses
  which need to operate so as to provide benefits which they are established for and to
  be sustainable into the future.

II. Social entrepreneurship and social entrepreneurs

Entrepreneurship is a way of thinking and behaving. It has opportunity as its
heart. Entrepreneurs recognise, create, engage and exploit opportunities. For them
creativity and innovation are fundamental. Entrepreneurs know how and where to
distribute resources. The effective networking is frequently used to accomplish it.
Entrepreneurs understand and manage risks overcoming inevitable setbacks. That
results in an added value for customers and clients which could be financial, social,
aesthetic or environmental capital, or a combination of those. Considering that,
„social capital” is defined as something of perceived benefit to individuals and
communities, sometimes named as „social value”. Reflecting on that, the value of
social networks is extrapolated to the term of the human capital [11].

Social entrepreneurship is a process of recognizing and resourcefully pursuing
opportunities to create social value. Social entrepreneurs are distinguished by their
innovativeness, resourcefulness and orientation towards oriented. They work on both
business and nonprofit goals to develop strategies that will maximize the social
impact of their enterprises. As entrepreneurial leaders they operate in a broad scope
of organizations: large and small; new and old; religious and secular; nonprofit, for-profit, and hybrid. All these organizations comprise the “social sector” [12].

Very often strengths and capacities of communities and individuals are not recognized. The social entrepreneur could see strengths and resources within the community and the opportunities to mobilize them. On the other hand, the community greatly enhances the entrepreneur’s ability to create something new. The enterprising skills of individual people set the basis of the social enterprises. Main characteristics of enterprising can include [10]: using initiative; generating creative ideas; carrying through on responsibilities; planning; seeking information; managing resources; flexibility; negotiation and influence; conflict resolution; dealing with tension; knowledge of key business processes (such as marketing); monitoring and evaluating performance, etc.

It should be mentioned another peculiarity of the social enterprises which leads to that the social entrepreneur is creating a business which he/she does not own. It is not easy to set up and run a social enterprise but if it should cease, it could not be sold for a personal profit – it hast to stop or to merge with similar company. The assets as money, equipment, building, etc. are passed over to another social enterprise or charity to continue serving their social purpose. Here, a question arises about the motivation of social entrepreneurs and their satisfaction of doing a sustainable business. All these concerns are closely linked to the striving after grant funding for the business. In the last the main approach is to address the needed openness and transparency in management, and control in particular, and the representation of the community. This point reflects the continuing debate on what constitutes a social enterprise [6].

In regard to the social business debate it is important to make a difference between the concepts of social enterprise and social entrepreneurship and some practitioners agree that they are not the same in terms of meaning. It is often accepted that social entrepreneurs work in an entrepreneurial manner for public or social benefit rather than to make money. They can be found in ethical businesses, governmental or public bodies, voluntary and community sector. Comparing to entrepreneurs in the business sector, social entrepreneurs use the skills of identification of untapped commercial markets and gathering together resources to break into those markets for profit for achieving a different effect. Social entrepreneurs accept people or communities in need for untapped markets which are
not reached by other initiatives. Therefore, social entrepreneurship is related to social enterprises but they are typically not the same thing. Social enterprises are businesses measuring the success in two directions - how much they earn and how much they benefit their community.

If it should be stressed on similarities, however, it should be stated that both not-for-profit and for-profit organizations apply innovative and transformational approaches to address government or market failures to provide goods, services and opportunities to excluded or marginalized sections of society. Hence, the differences come from that not-for-profit organizations may recover some of their costs (e.g. health service provision, education, and/or technology) if they want to sustain their activities and respond to their clients effectively, they must mobilize other sources of funds from the public sector and/or the philanthropic community. For-profit organizations may recover their costs and also generate profit with the main aim being to expand their social ventures and reach more people effectively. Personal wealth accumulation is not a priority for the social entrepreneur – profits are reinvested in the social enterprise in order to fund expansion [7].

Social entrepreneurship in its essence implies that entrepreneurs tailor their activities to be directly tied with the ultimate goal of creating social value, with little or no intention to gain personal profit. A social entrepreneur “combines the passion of a social mission with an image of business-like discipline, innovation, and determination” [3].

The first official event of the term „social economy” in Europe occurs in the early 90s when in Italy with the growth in cooperatives and development of the corresponding legislation defining the activities of the organizations providing social services to reduce the social exclusion of the vulnerable groups and to stimulate their labor integration. The development and popularity of the social cooperatives in Italy can be explained by the growing and unmet needs for social services which are not adequately met by the state.

The use of the term social entrepreneurship gains an increasing popularity. On the other hand, misunderstanding and uncertainty are noted about what exactly a social entrepreneur is and does. The term social entrepreneur is ill-defined, fragmented and has no coherent theoretical framework. The absence of consensus usually results in separated and independent works. The field of social entrepreneurship is in its infancy compared to the wider field of entrepreneurship [3].
The mentioned huge interest in social entrepreneurs and social entrepreneurship comes from the impact addressing social problems and the dedication to the well-being of society. The public percepts social enterprises in the context of the social needs they satisfy and the improvement in life quality to some societies.

A definition is proposed [3] that captures the key factors that are vital to social entrepreneurship: “The social entrepreneur is a mission-driven individual who uses a set of entrepreneurial behaviours to deliver a social value to the less privileged, all through an entrepreneurially oriented entity that is financially independent, self-sufficient, or sustainable”.

The above-cited definition combines four factors making social entrepreneurship distinct from other forms of entrepreneurship, i.e. social entrepreneurs:

- are mission-driven - dedicated to serve the mission of delivering a social value.
- act entrepreneurially - through a combination of characteristics that set them apart from other types of entrepreneurs.
- act within entrepreneurially oriented organizations - having a strong culture of innovation and openness.
- act within financially independent organizations - plan and execute earned-income strategies.

The goal is to deliver the intended social value while remaining financially self-sufficient. This is achieved by combining social and profit-oriented activities to achieve self-sufficiency, reduce reliance on donations and government funding, and increase the potential of expanding the delivery of proposed social value.

The lack of a common understanding and a common definition on social entrepreneurship leads to that other issues and concepts are confused and mistakenly associated with social entrepreneurship. Philanthropists, social activists, environmentalists and other socially-oriented practitioners are referred as social entrepreneurs. It is worth setting the function of social entrepreneurship apart from other socially oriented activities and identifying the boundaries within which social entrepreneurs operate.

It is important to define the concept of social entrepreneurship because it is not only a movement but a mechanism for social problem solving. It should be differentiated of other forms of social engagement and thinking also on it on an
individual level. Despite the lack of a universal definition, there are common qualities amongst successful social entrepreneurs and their organizations [4]. Social entrepreneurs are “the idea champions: people who advance change, working within, between and beyond established organizations”. Social entrepreneurs can help others to discover their own power to change helping in envisioning a new possibility and recognizing how it can be detailed in steps.

Considering social entrepreneurship as a process implying a long-term commitment and continual set-backs, it should be stated that social entrepreneurs share certain qualities as: ability to overcome apathy, habit, incomprehension and disbelief while facing heated resistance; ability to shift behavior, mobilize political will and continually improve ideas; ability to listen, recruit and persuade; among those they work with, they encourage a sense of accountability, and a sense of ownership for the change. They work in conditions of uncertainty and they have a high need for autonomy. They have the capacity to derive joy and celebrate small successes. Successful social entrepreneurship involves well-established behaviors which can be acquired. While some people appear to be born with more entrepreneurial inclination than others, most people can learn to behave like entrepreneurs [4].

Discussing similarities in skills and temperaments of social and business entrepreneurs, it should be stressed and taken into consideration that social and business entrepreneurs differ markedly in their primary objectives. For the latter it is most important to maximize profit and to establish a stable entity. For social entrepreneurs it is important to maximize the social impact usually addressing a need that is ignored by the others.

Comparing to governmental functions and activities, social entrepreneurship differs significantly in many ways, especially regarding the approach – while governments work top-down, social enterprises do it bottom-up. Social enterprises start because of an interaction with a problem on the ground level growing through trials and errors. Governments lack the needed understanding of ground levels that is the key to the success, they implement ideas before testing and adapting, bound by rules and procedures while social enterprises have more flexibility. The social enterprises have the chance to learn from mistakes trying different ideas working till they solve the problem. On the other hand, governments are under pressure for quick and tangible results. At the same time, governments could benefit from a wide range of resources and recognized legitimacy. In order social problems to be
addressed at the proper scale, creativity and agility of social entrepreneurs should be combined with resources and legitimacy of governments [4].

Furthermore, in doing a business the major challenge is to get financing, growth capital in particular. It is easier for a social enterprise to assure financing for a new idea than to assure the growth of the organization. Funding from governmental sources is accompanied by a number of difficulties and reporting requirements. One of the preferred funding sources is philanthropy which however characterizes by its fragmentation and little standardization, so that it is time consuming and does not lead to sustainability of enterprises. “Impact investors” - who seek financial goals and social impact, are an important source of capital for social enterprises. However markets for impact investing are still undeveloped. Other opportunities are connected to earned revenues as a way to finance large scale change in social enterprises [4]. Usually social organizations are financed by different sources – from family, friends, classmates and professional contacts to corporations, public foundations, social venture competitions, impact investors and Web-based intermediaries.

The term “blended value” refers to the commingling of social and financial objectives. Results of complementary nonprofit, business, and hybrid enterprises are good enough. The number of organizations working in this area, using a combination of business methods and philanthropy, increases. This is a good and promising strategy and it allows the social organization to benefit from the strategies of traditional business entrepreneurs which leads to a number of challenges. Sectors’ differences blur and new forms of financing will arise – the so called blended value or impact investors, investors who cross the lines between philanthropy, business and the public sector.

Social enterprises stay before another significant challenge too – the talent attraction. They should recruit without having a great ability to offer something comparable to other businesses, i.e. they rely on the promise of the “meaningful work”. The other important obstacle in this respect is the lack of a system of talent development. Along with financial challenges, this makes very difficult to retain staff. It is often observed that people choose social enterprises because of the economic downturn. This means that the question is open and needs special considerations.

Another challenge for social enterprises is connected to the ways of measuring results and evaluating impacts of the organization. In this context, it is worth distinguishing the scale of an organization and the scale of its impact. The size
is not so important as the reach of work and the success comes as a result of time and energy on effecting change. That way, sustainability is seen in the context of ideas and not the organization itself.

An obstacle to social change could be seen in specialization and divisions between fields and social groups. There are various factors acting in society and leading to new trends, behaviors and beliefs. Discussing innovation and change in society, there is a need of recombination of knowledge. Namely, social entrepreneurs can enter that niche as “creative combiners”, especially when addressing and solving social problems.

III. Different types of social enterprises

Social entrepreneurship and social enterprise embrace a diversity of concepts including various actors and terms [9]. Social enterprises could have a variety of different legal and organizational models. There is no right or wrong legal or organizational model. “One size fits all’ rule is not applicable because different models will be more appropriate according to different circumstances. The ability to access certain funding or certain tax benefits may depend on the type chosen. Usually it can be difficult to change the type once the social enterprise is set up. It is necessary to know and assess advantages and disadvantages of each type before setting a social enterprise [5].

Social enterprises’ forms may include [7]: employee-owned business - creating and sustaining jobs as part of economic development strategies; community business - having a strong geographical definition and focus on local markets and local services; credit unions - providing access to finance; co-operatives - associations of persons united to meet common economic and social needs through jointly owned enterprises; development trusts - key actors in community-based regeneration; social organization - providing employment and training to people with disabilities and other disadvantaged groups; social business - enabling charities to meet their objectives in innovative ways such as fair trade companies; intermediate labor market company - providing training and work experience for the long-term unemployed.

No one single model could be recommended. Each one has benefits and drawbacks making it more or less appropriate to a particular social enterprise. The structure to be chosen depends on the need to reflect and accommodate both social
enterprises’ social aim and intended ownership along with business aspects as size, funding sources and type of activity.

It should be also in mind that social enterprises operate under the same legislation and regulatory bodies that govern other enterprises and businesses. Therefore, it is not easy to discuss various options to ensure that the right legal structure is chosen which is the most appropriate to a social enterprise in terms of management style and mission. Some of the key considerations when choosing the right legal and organizational structure for a social enterprise are [6]: social ownership - ensuring that the community and stakeholder interest is reflected in the control and ownership of the enterprise; income streams and activities of enterprise - what proportion of income will be generated from donations, grants, fundraising, contracts, goods and service provision and other trading activities; raising finance - how does the enterprise plan to raise capital; regulations and reporting - some legal structures have a lot of regulation and may have limiting rules.

IV. Conclusion

The business model under which a typical social enterprise develops does not differ from the general business model either by its size or by its areas of activity. The difference comes from the application and the pursuit of common values such as the active involvement of social partners, the protection of certain social objectives; the application of the principles of solidarity and responsibility; combining the interests of members with the general interest; democratic control by members; voluntary and active membership; management autonomy and independence in relation to public authorities and foremost, reinvestment of the balance of the income to achieve the same goals and values of sustainable development and of service to the users and the community. Namely the application of these principles and the compliance with those values increases the trend in many areas of the economic activity for people to join together and create structures as social enterprises to protect their group or public interests, especially in the years of crisis.

References:


Methodological aspects of investigation of various issues of food safety

Abstract: The problem of food safety is the subject of increased attention to the regulation of the food market in the Russian Federation. Cross-border food safety issues necessitate a general discussion of the problem of food safety assessment for the development of food quality control processes. This raises the question of the transparency of methods for assessing the existing risks in this area, both in terms of assessing the impact of the introduction of new external and internal laws, rules and regulations, and in terms of organizing monitoring for the purpose of managing food quality on the principles of HACCP.

Keywords: food, safety, methods, assessment of impact factors, management.
оценки существующих рисков в данной сфере как с точки зрения оценки последствий введения новых внешних и внутренних законов, правил и нормативных документов, так и с точки зрения организации мониторинга с целью управления качеством пищевой продукции на принципах ХАССП.

Ключевые слова: продукты питания, безопасность, методы, оценка факторов воздействия, управление.

Материалы многих международных конференций и всемирных форумов по вопросам продовольствия и питания сформировали единое представление о том, что доступ к безопасному и высококачественному продовольствию является одним из основных прав человека [1, 2].

Доступность к продовольствию с такими характеристиками зависит от множества социально-экономических факторов и, соответственно, данный критерий обладает высокой лабильностью, отражающей международные отношения (в том числе санкции), принятие законов, стандартов и других нормативных документов в стране и за рубежом, изменение курса рубля, экономическую поляризацию различных групп населения, особенности ведения бизнеса, моральное устаревание системы сертификации и технологического оборудования, отсутствие эффективной структуры систем безопасности и качества сельскохозяйственной, промышленной пищевой продукции и кулинарных изделий системы общественного питания. Между тем, в Российской Федерации (РФ) в последние годы приняты государственные документы [3, 4], а также - стандарты, которые регламентируют управление качеством пищевой продукции на принципах ХАССП [5], требования к любым организациям в продуктовой цепи [6] и к продукции, производимой предприятиями общественного питания [7]. В то же время следует отметить, что сегодняшнее правовое поле рассматривает стандарты не как документы обязательного характера, а лишь рекомендательного. Сложившаяся практика вступает в противоречие с научным представлением о том, что качество пищи является одним из фундаментальных факторов формирования здоровья [8].

Такая демократизация в сфере регулирования и делегирования ответственности в области безопасности продуктов питания хозяйствующим субъектам имеет в российских условиях неоднозначные последствия [9, 10, 11]. В то же время, как показывает мировой опыт, обязательное соблюдение требований...
нормативных документов является необходимым условием обеспечения качества и безопасности пищевых продуктов в современных социально-экономических отношениях субъектов рынка [12, 13].

С учетом того, что стандарты РФ в области управления качеством пищевой продукции гармонизированы с нормативными документами Европейского Союза (ЕС), возникает объективная целесообразность сопоставительного обсуждения зарубежного и отечественного опыта в области безопасности пищевых продуктов.

В настоящее время в РФ и западных странах ведутся дискуссии по обшим вопросам оценки различных аспектов безопасности пищевой продукции [1, 2, 14, 15, 16, 17]. Исходя из этого, наше внимание далее сосредоточено на обсуждении некоторых основополагающих элементов любой оценки методов для выявления финансовой ценности и экономической оценки нерыночного воздействия разрабатываемых правил безопасности пищевых продуктов. Это особенно представляется интересным из-за разнообразия воздействий на различные экономические интересы участников в цепи пищевой продукции. Кроме того, нельзя не отметить, что нормы безопасности пищевых продуктов имеют отношение к различным областям государственной политики - к здравоохранению и защите потребителей, конкуренции, торговле и окружающей среде.

Действующий в ЕС документ Европейской комиссии [12], разработанный в ответ на призыв сформировать более совершенные правила [13], требует наличия инструментов для принятия более эффективных и действенных положений нормативных документов и совершенствование координации политики экономических, социальных и экологических решений безопасности продуктов питания.

Упомянутый документ ЕС [12] приводит классификацию, в которую включены 9 потенциальных воздействий, которые по литературным данным считаются полными с позиций соблюдения правил безопасности пищевых продуктов и методологии их количественными оценки. Эти воздействия рассмотрены в рамках экспертной оценки количественных методов, обычно используемых в различных сферах практики – общественного здравоохранения и безопасности, домашнего хозяйства и потребления, конкуренции, ведения бизнеса, государственной системы стандартов, системы производства и окружающей среды.
Общественное здравоохранение и безопасность. Правила безопаснос- ти пищевых продуктов ставят своей основной целью обеспечение охраны здоровья населения и снижения риска заболеваний и связанных с ними расходов на здравоохранение. В рамках данной цели, как можно судить по литературным данным, как правило, измеряются с применением методов оценки стоимости болезни или альтернативно с применением методов выявления готовности населения платить за снижение опасности продуктов питания [12, 18, 19, 20].

Другие методы общей оценки, которые основаны на социальной финансовой отчетности и могут использоваться для оценки пользы вводимых нормативов для здоровья населения.

Домашние хозяйства и потребление пищи. Правила и нормы оказывают влияние на ведение домашних хозяйств и последствия потребления домашней пищи за пределами контроля со стороны общественного здравоохранения. В ЕС рассматривается вопрос о введении мер по обеспечению безопасности пищевых регулирования цены в зависимости от качества продукции и наличия разнообразия в доступных продуктах [18, 19]. При этом отмечается, что в конечном счете цена и доступность продуктов влияют на выбор своей потребительской корзины и благосостояние общего домашнего хозяйства. Отсюда следует, что методы анализа гедонистической ценовой политики позволяют оценивать готовность платить за снижение уровня опасности продуктов питания для здоровья населения [18, 20]. Другие оценочные исследования в ЕС осуществляются в рамках микроконометрических моделей анализа спроса и благосостояния населения.

В нашей стране, по оценкам специалистов, в домашних условиях готовится примерно 69% пищи, и при этом значительная часть населения не может включить в свой рацион питания качественные продукты питания из-за их повышенной стоимости, в отличие от обеспеченных слоев общества [20]. Население начинает проявлять большую озабоченность по поводу взаимосвязи между продуктами питания и здоровьем, однако решению в этой области вопросов оптимизации препятствует социальное неравенство. Кроме того, отсутствие полной и достоверной информации о качестве продуктов питания также является существенным тормозом в области безопасности пищевой продукции. Это обусловлено тем, что в России, к сожалению, эти механизмы вопросов, связанных с качеством и безопасностью пищевой продукции, сформированы сравнительно
слабо, чем в ЕС, где производство и реализация пищевых продуктов, произведенных без соблюдения принципов ХАССП, запрещены.

Конкуренция. Новые или измененные правила и нормы всегда играют определенную роль в динамике рыночной конкуренции. Национальные меры могут влиять на конкурентоспособность внутреннего и внешнего бизнеса, поскольку они могут создавать рыночные барьеры, которые могут в конечном итоге привести к рыночным сбоям (олигополии, монополии), изменить балансы между фирмами разных экономических масштабов и влиять на качество и безопасность пищевой продукции [9, 11, 21, 22, 23].

Ведение бизнеса. Новые правила и нормы определяют затраты и преимущества на бизнес-уровне. Эксплуатационные и административные затраты могут быть оценены с помощью методов бухгалтерского учета и микроэконометрических исследований затрат. В то же время трудно оценить количественно выгоды, которые формируются, например, при улучшении сроков хранения продукции, расширении рынка, сохранении клиентов, сокращении брака или переработки продукта, а также при снижении у персонала ответственности за продукцию. Однако метод учета затрат представляет важный альтернативный путь количественной оценки потенциальных выгод снижению рисков [17, 18, 19].

Государственная система стандартов. Исследования в данной сфере недостаточно были нацелены на последствия, которые могут вызвать введение стандартов и правил органов государственного управления. К их числу следует отнести расходы, связанные с разработкой новой системы контроля и организации и обеспечения контроля, которые, в конечном счете, могут стать дополнительным бременем на налогоплательщика. Цель стандартизации - решение наиболее правильного и экономичного варианта т. е. нахождение оптимального решения. Найденное решение дает возможность достичь оптимального упорядочения в определенной области стандартизации. Для превращения этой возможности в действительность необходимо, чтобы найденное решение стало достоянием большого числа предприятий организаций, а также специалистов. Только при всеобщем и обязательном использовании этого решения существующих и потенциальных задач возможен экономический эффект от проведенного упорядочения.
Система производства и окружающая среда. Безопасность пищевых продуктов тесно связана с системами сельскохозяйственного производства и пищевой промышленности, функционирование которых имеют экологические последствия. Оценка безопасности пищевых продуктов приобрела актуальность в области производства и потребления пищевой продукции. Методы, специфичные для количественной оценки экологических последствий, такие как оценка воздействия жизненного цикла [24] также могут использоваться для интеграции оценки политики в области производства продукции.

Разнообразие воздействий принятия тех или иных нормативных документов на экономическую жизнь общества можно разделить на три основных категории: 1) макроэкономические воздействия (например, воздействие на экономический рост, инвестиции, инфляция); 2) воздействие на рынок труда (например, создание и потеря рабочих мест, мобильность); 3) дифференцированное воздействие на подгруппы населения, т.е. на уязвимые или малоимущие группы населения.

Рассмотрим отдельные примеры методологических принципов количественной оценки последствий введения новых правил и норм на отдельных примерах.

Гедонистическая ценовая политика. Метод гедонистического ценообразования отличается от других методов, поскольку он полагается на наблюдаемую цену и данные о потреблении для оценки гедонической функции. В принципе гедонистическая функция описывает характеристики цены продуктов питания для отдельных лиц, включая некоторые показатели уровней риска или безопасности [18]. Модельный подход (даже простая регрессия) позволяет оценить предельный вклад каждого атрибута общей цены.

Проблема разработки системы гедонических индексов в РФ для продуктов питания недостаточно разработана.

Готовность платить за снижение уровня опасности продуктов питания. Методы, для которых конечной целью является оценка денежной суммы, которую человек готов заплатить за изменение уровней безопасности пищевых продуктов, позволяют выяснить: за что потребители будут платить за продукты с уменьшенным риском болезней пищевого происхождения. Таким образом, гедонический ценовой анализ - это косвенный метод, основанный на установле-
нении различия в ценах в зависимости от уровней безопасности после учета любых других характеристик продукта [12, 18].

Из данных проведенного в 2012 и 2015 годах мониторинга следует, что население нашей страны все больше внимания уделяет качеству продуктов питания. Об этом можно судить по следующим показателям:

- увеличение доли респондентов, которые ценят продукты без искусственных добавок и красителей;
- доля респондентов, которые доверяют качеству продуктов отечественного производства и половина из них готова платить больше именно за российские продукты;
- респонденты при покупке продуктов в первую очередь обращают внимание на состав ингредиентов и срок годности, по возможности отдавая предпочтение товарам экологически чистым, без содержания ГМО и свежим (охлажденным) [20].

Однако обращает на себя внимание следующий тренд: за последние три года с 29% до 15% уменьшилась доля респондентов, которые не готовы платить больше за особые качества и характеристики продуктов [20].

**Стоимость болезни.** Метод определения стоимости болезни устанавливает меру потерь в экономике, возникающих из-за болезней и преждевременной смерти путем количественного определения прямых медицинских расходов и косвенные расходов, связанных с упущенной заработной платой, потерянной производительностью [25]. Это метод в основном используется для количественной оценки пользы для здоровья в связи с уменьшением риска в результате внедрения политики о заботе безопасности продуктов питания. Однако этот метод имеет некоторые недостатки: адекватные данные не всегда доступны для острых заболеваний и довольно трудно получить данные о стоимости хронических осложнений от болезней пищевого происхождения [16]. Другая проблема связана со стоимостью человеческих жизней [21]. Тем не менее, оценка стоимости болезни широко используется в США для анализа данной проблемы в связи с внедрением принципов ХАССП в сфере производства продуктов питания [15, 16].

Анализ стоимости болезни, таким образом, представляет важный механизм изучения экономического бремени определенного заболевания или состоя-
яния здоровья для общества через идентификацию, измерение и оценку пря­мых и косвенных затрат [18].

Отечественные авторы не рассматривают анализ стоимости болезни как метод клинико-экономического анализа, так как в его задачи не входит учет ре­зультатов применения конкретных медицинских технологий [8]. Однако монито­ринг пользы для здоровья в связи с уменьшением риска в результате внедре­ния политики о заботе безопасности продуктов питания представляется цен­ным для принятия управленческих решений в сфере производства пищевых продуктов и совершенствования нормативных документов.

Аналіз затрат. Методы анализа затрат используются для анализа воз­действия на фирму затрат различного размера [16, 17, 21, 22]. Метод прост и понятен. Вероятно, поэтому это самый используемый метод для количествен­ной оценки расходов при оценке воздействия после введения принципов ХАССП для управления качеством пищевой продукции.

Это особенно актуально также и в нашей стране в связи с необходи­мостью внедрения принципов ХАССП на всех предприятиях пищевой промыш­ленности и общественного питания. В настоящее время методическая часть анализа затрат в условиях необходимости разработки плана ХАССП и обеспе­чения его реального функционирования сформулирована только в общих чер­тах. Между тем, определение затрат на качество с точки зрения получения ин­формации о их стоимости представляется актуальным для принятия руковод­ством управленческих решений по внедрению принципов ХАССП на предприя­тии. Соответственно, для принятия экономически обоснованных решений в анализа затрат в области качества производимой продукции необходимы:

- установление критических участков производственной деятельности, требующих совершенствования организации производства согласно объявлён­ной политике предприятия;
- обоснование размеров инвестиций в обеспечение и улучшение каче­ства;
- обеспечение управления качеством производимой пищевой продукции при минимизации общих издержек на ее производство;
- анализ затрат на качество и результатов хозяйственной деятельности предприятия.
Анализ экологических проблем. Данная область является чрезвычайно широкой, прежде всего, с учетом релевантности воздействия на окружающую среду для различных стратегий применения нормативных документов. Очевидно, что в центре внимания находится количественная оценка экологических последствий введения нормативно-правовых актов. Количественные методы могут быть основаны на различных методических подходах [22,23]. Однако, вероятно, применение сложных моделей оценки воздействия, например, моделей биологического риска позволит более полно оценить воздействие на окружающую среду. Кроме того, для управления качеством пищевой продукции на принципах ХАССП незаменимым является метод анализа жизненного цикла пищевой продукции от поля/фермы до вилки [26], целью которого является выявление экологических воздействий на каждом этапе производства и потребления пищи.

Обзор отечественной литературы по проблемам безопасности пищевых продуктов России также свидетельствует об актуальности экологических исследований на всех этапах производственной цепи пищевой продукции и необходимости изучения различных аспектов безопасности пищевых продуктов [9, 10, 11].

Таким образом, из приведенных сведений зарубежных и отечественных авторов следует, что крайне важно не только формирование общих научных методических подходов к управлению качеством пищевой продукции согласно концепции риска, но и создание алгоритмов исследования рисков не только в результате контаминации продуктов питания, но и введения новых законов, нормативных документов и правил регионального и международного характера, последствия применения которых могут быть неопределенным в экономическом, медицинском и экологическом аспектах. С учетом этих обстоятельств остается актуальным создание методологической базы оценки рисков и ее внедрение в практику принятия управленческих решений в нашей стране. Все это позволяет заключить, что проблема продовольственной безопасности страны предусматривает хорошо осмысленные системные решения и реализации действенной стратегии в обеспечении безопасности пищевой продукции.

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Functional characteristics and development of the idea for control

Abstract: The material reviews the essential characteristics of the social phenomenon "control". The analysis of the reasons for the control origin uncovers two lines of meaning – one, where control is critical social attitude and the other, where control is a basic managerial function. Both inceptions’ tracking creates possibility for the control being accepted as a key factor for society’s development because of its possibilities to impose norms, to introduce results analysis and on this ground, correctives in the behaviour of all socially active subjects to be introduced. The chronology analysis of the development of the idea for control predetermines the establishment of complete and systematic notion about the fact that a phenomenon of a long history possesses high potential for wide application, which can be thought and worked on in the future. Uncovering the characteristics of the social phenomenon “control” proves this is not easily achievable goal and, because of that, the tasks are limited in a way concerning number and volume. The presentation is grounded on the predominant use of analytical methods and proves the society and its development would have achieved far weaker and unsatisfying results in all fields without control.

Keywords: control, norm, feedback, result, critical attitude.
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The material reviews the essential characteristics of the social phenomenon "control". The analysis of the reasons for the control origin uncovers two lines of meaning – one, where control is critical social attitude and the other, where control is a basic managerial function. Both inceptions' tracking creates possibility for the control being accepted as a key factor for society's development because of its possibilities to impose norms, to introduce results analysis and on this ground, correctives in the behaviour of all socially active subjects to be introduced. The chronology analysis of the development of the idea for control predetermines the establishment of complete and systematic notion about the fact that a phenomenon of a long history possesses high potential for wide application, which can be thought and worked on in the future. Uncovering the characteristics of the social phenomenon "control" proves this is not easily achievable goal and, because of that, the tasks are limited in a way concerning number and volume. The presentation is grounded on the predominant use of analytical methods and proves the society and its development would have achieved far weaker and unsatisfying results in all fields without control.

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жимую цель, и поэтому его задачи, в определенном смысле, ограничены и по количеству, и по объему. Данная выкладка основывается преимущественно на использовании аналитических методов и доказывает, что общество и его развитие без контроля могли бы достигнуть гораздо более слабые и неудовлетворительные результаты во всех сферах.

**Ключевые слова:** контроль, норма, обратная связь, результат, критическое отношение.

Эволюция человеческого общества имеет объективную потребность в контроле. Его богатая история доказывает общественную значимость контроля, как необходимого атрибута социальной среды. Появление контроля связано с началом человеческой сознательной деятельности. Развитие и совершенствование контроля связано с достижениями человеческого гения в области социального развития. В связи с этим сущность контроля является научно обоснованной для переосмысления и экспонирования в естественную среду социально-го окружения, которое развивает и обогащает конкретные формы проявления. Суть контроля является выражением наиболее важной и существенной стороны, определяющей внутреннюю относительную устойчивость и глубину процессов, явлений, отношений, которые проявляются с помощью форм и методов воздействия.

Определение понятия „контроль” и его исследование может быть осу-ществлено с различных точек зрения. В теории управления встречается множе-ство определений сущности контроля, которые, в преобладающих случаях, только касаются внешних форм его проявления и конкретного способа его су-ществования. Большинство авторов рассматривают его в качестве функции государственного управления, точнее как и организацию в системе государства и совокупность функций, в продолжение государственным функциям, которые прослеживают изменения параметров системы и т.д. Последовательность мнений может выглядеть еще более внушительно и подробной, но это не меняет общий вывод: государственная функция, управленческая функция, система управления и т.д. все это внешние стороны и признаки конкретной формы су-ществования контроля. В изложенных выше и в других мнениях отсутствует внутренняя сторона, логика происходящих процессов, устойчивых характери-стик общественного отношения, потому что контроль появляется до государ-
ственного устройства и его форм управления, до формирования структур, систем и функций в них.

Для наиболее полного и всестороннего выяснения рассматриваемого вопроса [1], а следовательно и для удовлетворения поставленных целей, были выбраны два мнения о контроле, отражающих его способность, как формы общественного отношения и как функции управления. С самого начала своего сознательного развития человеческое общество, принимает объективную потребность от контроля. Представляет его и выражает его, как отношение коллектива, группы людей к поведению и индивидуальным возможностям отдельных членов общества и как точно они соответствуют требованиям принятых правил для равноправного участия в создании и потреблении материальных благ. Еще в этом аутентичном и примитивном выражении общественных отношений выделяются две стороны - субъект в лице коллектива и объект - отношение отдельных индивидов к способу производства и распределению.

На следующих этапах общественного развития контроль сохраняет свою существенную характеристику, как форму общественного отношения, связанную с конкретно обоснованной критичностью. В отношении осмысления и позиционирования контроля, как особой формы, отражающей общественные отношения, автор принимает как наиболее полное мнение, что контроль является критическим общественным отношением, основанным на социально-значимых зависимостях "господство-подчинение", которое целенаправленно занимается ограничением свободы группы социальных субъектов, с учетом реализации интересов другого или другой группы социальных субъектов.

Усложнение контроля, как общественного отношения с определенной критичностью [2], связано с качественными изменениями процесса изменения способов производства и распределения общественных благ. В усложняющихся социальных отношениях на более поздних этапах развития человеческого общества все более ярко выражается тенденция индивидуализации субъекта контроля и его превращение в функцию специально созданных учреждений. Управляющая система формирует свой аппарат и конкретизирует свою функциональность в зависимости от интересов господства.

Контроль, как социально-сбалансированная форма, выражающаяся в отношении господства и подчинения, предопределяет возможности контролирующего ограничивать поведение контролируемого и заставить его соблюдать
определенные нормы. В этом смысле контролирующий властует над контролируемым, как ограничивает его свободу во имя реализации своих интересов. Предпосылки для утверждения этой власти содержатся в объективных различиях в повседневной жизни социальных субъектов, содержащихся в их основных характеристиках [3].

Рис. 1. Структура и предпосылки контроля, как общественного отношения

Анализ контрольных отношений, как социального феномена регистрирует большое разнообразие с точки зрения их классификации и видов. Причисление определенных, рассмотренных отношений к конкретному типу [4] осуществляется в зависимости от способа совмещения и экспонирования различий интересов и потенциала социальных объектов. Различия в интересах показывают существенные характеристики конкретных, социальных организационных структур, а также и специфику периодов их развития. Именно этот факт отражает разнообразную, распространенную целесущережность критических отношений к определенным аспектам поведения социальных субъектов, в которых интересы провоцируют высокую конфликтность.

В ответ на эти преобладающие критические аспекты поведения отделяются зоны с эскалацией необходимости контроля. Пользователи ресурсов власти, мотивированные своими интересами, объявляют конкретный суверенитет критических для них границ поведения в этих зонах в установленных правилах и нормах организации. Различия в возможностях участвующих в организации социальных субъектов, снова имеют свою историческую и конкретную специфику.

Преобладающие источники власти могут быть различными, причем в качестве доминирующих выдвигаются определенный круж возможностей для господства. Доминирующие возможности для господства, в свою очередь, предопределяют соответствующие, наиболее широко используемые способы влияния...
ния на поведение других людей, с помощью которых обеспечивается соблюдение принятых правил и норм. Так же, как правила и нормы, способы воздействия для их соблюдение в той или иной форме приобретают институционализацию в социальных организациях.

Воздействия на поведение отдельных лиц, их ориентация в определенном направлении в зависимости от определенных критериев, норм и правил, объективно протекающего процесса непрерывного стремления к сбалансированному соотношению между субъектом и объектом контроля. Персонификация и индивидуализация не меняют отношений в этом процессе, кроме случаев, когда приобщение поведения к интересам определенной группы и является вопросом целенаправленно проводимой манипуляции в точно определенных границах, зарегистрированных в определенных интересах.

Из описанного выше можно сделать вывод, что анализ специфики, проявленной на различных этапах процесса, является особым выражением и конкретным проявлением двусмысленности [5] единного контрольного отношения - как критического отношения и как отношения господства и подчинения - предоставляет возможность типологии этого контрольного отношения в различных организациях, а также в период их развития [6].

![Рис. 2. Тип контрольных отношений](image)

Каждая экономическая система может быть рассмотрена как совокупность взаимосвязанных производственных процессов, состоящих из отдельных операций, при которых определенные предметы труда преобразуются в потребительские значения [7]. Единство процессов и формирующих их операций заключается в организованной производственно-технологической целесообразности, с доказанной необходимостью и логической последовательностью связей между ними.
Тот факт, что экономическая система является моделированной из процессов и операций, что подтверждается конкретным выражением определенной человеческой деятельности, осмысленной отношениями личности и их формирования, определяет ее как социальную организационную структуру производственно-функционального назначения. Центральная проблема при анализе социальной организации состоит в том, насколько ее устройство и функционирование эффективно обслуживает ее производственно-функциональное назначение. Для ее решения необходимо, чтобы управление экономическими системами контролировало, как производственно-технологическую целесообразность включенных в систему процессов и операций, так и их социальные стороны, эффективное структурирование социальных отношений, в том числе и отношений контроля.

Как специфическая форма с социальной точки зрения, предназначением управления является обеспечение эффективного присутствия человеческого фактора в производственно-технологическом процессе. Контроль может быть рассмотрен как своеобразная функционально-определенный инструмент господства, объективно обусловленный потребностями кооперированного производства в условиях разделения труда [8]. Объективное требование было утверждено в интересах тех, кто держит монополию на проведение организаторских и управленческих функций.

Организованный контроль нейтрализует возможности для автономии исполнителей, обслуживающих производственные процессы. Принудительный характер осуществляемого над угнетенными контролем вызывает разочарование. Это является естественной реакцией, как выражением несогласия с целенаправленной деятельностью организации для их поглощения и подчинения сообразно своим целям [9]. В этом смысле, хотя наблюдается определенное сопротивление, объективно воспринимается по необходимости государственное воздействие, как основное условие для развития и совершенствования.

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Approaches to the liberalization of agricultural land market in Ukraine through the prism of the experience of European countries

Abstract: In this article the authors investigated the essence of the term “agricultural land market”, analyzed the approaches of its formation in EU countries and assessed the prospects of the economic effect of the market liberalization in agricultural land in Ukraine.

Keywords: land relations, agricultural land market, land circulation, moratorium, land evaluation, ground rent, European experience, the cumulative effect.

The statement of the problem. Modern agricultural transformation in Ukraine's economy is focused on the removal of the moratorium and the launch of the free agricultural land market which, according to scientists is able to feed 300 million people. It is a powerful resource for the restart and the development of the agricultural sector and the economy as a whole that involves attracting investment, creating jobs, stabilizing the banking system, the growth of profits. In General, in the agricultural sector today you can already invest more than in the whole of Europe which is currently checked. From the correctness of the chosen model of the free agricultural land market in Ukraine the effectiveness of the implementation of this diverse land resource potential will depend. Despite the high fertility and the world’s highest degree of land resources involvement in the economic circulation in Ukraine it is still unable to carry out the transfer of land in the possession of effective landowners and turn it into a key factor of economic growth.
The question of property and land prices is sharp and speculative, since it simultaneously represents both conflicting public fears and business interests. That’s why the moratorium on sale of agricultural land has been around for over 16 years, despite the fact that the introduction of a free agricultural land market can improve the well-being of tens of millions of Ukrainians. In the overview perspective of the strategy of forming a liberal land market in Ukraine it cannot be considered as an end in itself, but should be determined as a combination of the requirements of the market and the environment, maintain their dynamic equilibrium, respond to external and internal challenges and reflect the interests of all participants in the land. In the context of the positive example it is worth to explore experience and different ways of creating and functioning of agricultural markets in the EU countries. Therefore, the search for approaches to the liberalization of the agricultural land market belongs to the most urgent of the scientific view of the tasks that have to confirm or deny the existing hypothesis:

1. The agricultural land market and circulation of lands of identical categories?
2. The price of land in Ukraine after the termination of the moratorium will terribly increase. The ratio of rents and prices will be the same as in the EU?
3. Whether to allow the free sale to foreign investors, domestic holdings? After the abolition of the moratorium on land they will buy it from the peasants for next to nothing?
4. Liberalization of land market will turn the raw appendage? Increase the shadow sector of the national economy?

Based on these positions, the main problem of scientific discussions and practical action is to find the methods, mechanisms and instruments for the combination of positive international experience of the agricultural land market functioning of the historical features of the Ukrainian civilization development and national traditions to create an incentivized, effective landowner.

**Analysis of recent research and publications.** The problems of the theory, methodology and practice of the transformation of the land to the market found their reflection in the treatises of Dudych M., Zayats V., Zinchuk T., Zos-Kiora M., Martin A., Mesel-Veseliak V., Pronina O., Skydan O., Tretiak A., Fedorov M., Khodakivska O., Sharoh H., Ahner D., Gliessmann S., Swinnen J., Ciaian P., Kancs A., Van Herck K., Vranken L.
However, by this time the unity of thoughts concerning the problems of complex formation and functioning of liberal land market was not achieved in terms of geopolitical changes both in Ukraine and in the modern EU.

**Purpose of research.** In the light of the European integration the process of Ukrainian generalization of liberalization aspects of the agricultural market do not lose their relevance. The purpose of this research is an analysis of the formation and development prospects of agricultural land market, identify the possible consequences of the moratorium removal on the purchase and sale of agricultural land and the search for an acceptable variant of further land reform policy in Ukraine. Exploring modern approaches to the formation of the free market of land in European countries it is necessary to examine the theoretical basis and features of the functioning of these markets under different angles, which will provide the ability to extrapolate these data into Ukrainian practice. Expect that many trends are common to the markets of the land of Ukraine and neighboring countries.

Ukraine's transition to a liberal market of agricultural land requires a scientific substantiation of theoretical and applied modern approaches to regulation of land relations in Europe with the purpose of their use in domestic realities. Fundamentals of forming effective and transparent agricultural land market require the creation of understandable and clear mechanisms for the regulation of land use systems at various levels. Today, Ukraine is trying to create a coherent strategic program and eco-social development of land relations, so it's on materials of the European practice of public administration in terms of post-industrial agrarian transformation outline the priority tasks of the organs of the land administration, which should include: ensure the dynamic development of land relations; the land improvement in agricultural production; improving the monitoring of land; the development of a land market; the development of lending on security of land; improvement of the procedure of charging for land; improving the efficiency of the State management of land resources; improving the organization of controls over the use and protection of lands.

**The results of the research.** Postindustrial shift has significantly influenced the development of productive forces and production relations in the economic systems of the world, implicitly having changed the ideological guidelines of the peasantry, government and society on the development of land relations in the direction of the idea of economic and ecological and social efficiency of agriculture. In
the European countries that are EU members hosted a shift in public agricultural policy on diversification of economic and legal mechanisms of the functioning of the market-based circulation of agricultural land in order to meet the new agro investors. For Ukraine the same land is the most valuable national wealth and powerful potential competitive resource. In terms of the quality level of the land – the presence of black soil – Ukraine takes the fourth place in the world: Russia – 145.4 million hectares (46.3%); the United States – 55.1 million hectares (17.6%); China is 38 million hectares (12.1%), Ukraine – 27.8 million hectares (8.7%); all other country-15.2% [1]. Taking into account the fact that the total area of the world's black soil is only 314 million hectares or 2.4% of all soils and the fact that in many countries there is no black soil altogether (such as Norway and the Netherlands) or its area of scant (as in neighboring Poland is about 1% of the territory) then after the expiration of the moratorium in Ukraine there will be a new potentially powerful free market of agricultural land in Europe. Therefore, the study of the actual state of the land market in Ukraine is causing great interest in both domestic and foreign investors.

For the study of liberalization of agricultural land market issues in Ukraine first we must give a clear division of categories, which will operate: “land relationship”, “agricultural land”, “agricultural land market”, “circulation of agricultural lands”.

Today, the concept of “land relationship” continues to cause active debate in the scientific circles. In most cases the land relations are associated with the category of “property”, analyzing the aspects of the assignment of the land as the economic benefits of those or other subjects.

In particular, Bochkov M. defines the land relations as relations in the field of ownership, disposal and use of the land as the “means of production”, and Zhelyenko K. determines land relations as “public relations”, composed between subjects of economic activity as a result of the management of the land fund, through the use, disposition and possession of land as object and subject of economic activity that are influenced by the regulatory organizational and economic mechanisms, Nosik V. focuses on the “management approach” to the definition, Shulha M. emphasizes the “ecological component” of the contents of the land, and according to Hutsuliak H. land relations are “an element of industrial relations, society and a social nature belong to the economic base of society”. Broader views respected Hlistun V. and Uliukaev V. who interpret land relations in the “functional approach”, arguing that with land ownership forms an important aspect of land relations is a form of land
management, which largely depend on the form of ownership on the ground but are characterized by a system of political, socio-economic, legal and administrative measures aimed at organizing the land [2]. The modern definition of land can be found in the writings of Tretiak A.: “land relations are public relations between State authorities, local authorities, citizens and legal entities regarding the possession, use and disposal of land plots and state management of land resources of Ukraine” [3]. The Land Code of Ukraine [4] defines agricultural lands purposes as lands granted for the production of agricultural produce, agricultural research and training activities, the corresponding production infrastructure or intended for these purposes. Thus agricultural lands include farmland (arable land, perennial plantations, grasslands, pastures, and fallows) and non-agricultural land (commercial ways and purlins-protecting forest strips and other protective planting, other than those assigned to the forestry land destination, the ground under the farm buildings and houses, temporary preservation). Note that the object of our research is only a farmland.

In scientific discussions and in accordance with the existing Ukrainian practice, the notion of “the market” and “circulation” of land is very often mixed together, unlike the practice of the old EU countries. Because the reform of the agricultural land market in Ukraine began only in 1990, and, for example, the history of the development of the open liberalized land market in the UK is more than 200 years old. A part of domestic scholars interprets the concept of “agricultural land market” as more widespread than circulation of land because, in addition to the system of agreements (operations), it also includes the mechanisms and infrastructure. It is considered that the circulation is a set of operations, and the market is the operation mechanisms and infrastructure. The rest of the scholars on the contrary consider that the land market is a part of the land, which includes only certain operations, such as the purchase and sale of land (shares), letting them rent and mortgage loan, receiving compensation when land is ejected for State and public needs [5].

Regarding the economic entity of land market, we close to the idea of economist Carl Polanyi [6] that the land market is a set of real interactions between sellers and buyers of land plots, lease rights, also institutions and organizations that provide and limit the freedom of such interactions. Accordingly, we believe that the organizational structure of the land market consists of 3 components:

1) peer interactions (sale, lease, exchange, mortgage and inherit land);
2) objects (land, property rights and securities, the basis of whose lying plots or rights);

3) subjects of the market (sellers (owners), buyers).

Under the land circulation we understand the totality of transactions with land plots that are performed in accordance with the norms of civil and land laws by entering into civil-legal transactions and registered by the competent State authorities. Moreover, the circulation of land can be both market and non-market. The market circulation is when the transition of land rights between the subjects of the action takes place according to the law of supply and demand and makes sure the contract of sale or lease agreement. Non-market circulation of land-ownership is the transaction of rights by inheritance, gift or easement without regard to demand and supply. Therefore, we believe that the category of “land circulation” is wider than the category of agricultural land market. According to the Draft of Law of Ukraine “On the turnover of agricultural land” [7]: the lands market is a system of relations between the owners of land (the rights to them), and people who acquire the right to land, public authorities, government privatization and local governments relating to the conclusion, execution, change and termination of civil-legal agreements, which include the alienation of land or rights to them. In turn, the circulation of land (their rights) is the switch of rights to land from one person to another on the basis of contracts, including those concluded by the results of the land trades.

Based on the specified definitions and aggregated statistical data (table 1), we can conclude that in Ukraine the circulation of land plots, especially its non-market part has existed since 2000 and is one of the largest in Europe – 7 million citizens entitled to privatization of 28 million hectares of land shares, a transaction which draw mainly through inheritance. And market of agricultural land is still being formed, because the owners of the shares remained the owners only on paper, and they cannon dispose the land as the property due to the introduction on 1 January 2002 of the moratorium on sale of agricultural land.

Therefore, it is reasonable to conclude that in Ukraine in 2002-2016 years land were given, but the rights to dispose it as valuable property as real estate, transportation, privatization vouchers, any other private assets were not given. From a legal point of view this is a pure discrimination, restrictions on the constitutional rights of citizens of Ukraine to be stewards of their private property on the ground.
Privatization of this asset in Ukraine, unlike neighboring States in Eastern Europe caused the emergence of a new market. The moratorium was introduced as a temporary measure until regulatory-legal base of the alienation of the land convert it into a fully-fledged market asset and it will not be sufficiently balanced. The moratorium is valid for 16 years and hampered the economic development of both Ukraine and every potential seller-buyer in Europe.

Taking into account the natural-resource potential, the growth of world demand, cheap labor and proximity to potential markets, Ukrainian producers of agricultural products are rubble competitive on the world market. According to experts of the World Bank in an innovative approach to the use of agricultural land, Ukraine may increase export of products already in 2020 up to $27 billion that is, double the figure by 2015. After all, Ukraine occupies the first place in Europe in the area of arable land, which is 41.5 million hectares, that is 30% and 2.4% in the world.

In the structure of ownership of private property dominated by State – 74% and 26%, respectively. More than 50,000 firms leading economic activity in the agricultural land market. According to International Monetary Fund (IMF) estimates the cancellation of moratorium in Ukraine will lead to the creation of a robust land market that will generate a $14-40 billion of the money supply in circulation, expected aggregated income of the population in the next 10 years from the sale will be $8-25 billion and from rental – $7-15 billion. This will lead to the average annual growth of Ukraine’s

### Table 1. Transaction of ownership on the land share, certificated

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2001 The number</th>
<th>2005 The number</th>
<th>2010 The number</th>
<th>2014 The number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notarized change of ownership</td>
<td>425894 100</td>
<td>924533 100</td>
<td>1257462 100</td>
<td>1373780 100</td>
</tr>
<tr>
<td>Including inherited</td>
<td>324898 76.29</td>
<td>813956 88.04</td>
<td>1145073 91.06</td>
<td>1261129 91.80</td>
</tr>
<tr>
<td>Presented</td>
<td>87565 20.56</td>
<td>95157 10.29</td>
<td>95503 7.59</td>
<td>95606 6.96</td>
</tr>
<tr>
<td>Exchanged</td>
<td>754 0.7</td>
<td>2393 0.26</td>
<td>2760 0.22</td>
<td>2864 0.21</td>
</tr>
<tr>
<td>Sold</td>
<td>12677 2.98</td>
<td>13027 1.41</td>
<td>14126 1.12</td>
<td>14181 1.03</td>
</tr>
</tbody>
</table>

* Data concerning the number of certified transitions of ownership of land shares are cumulative since 2001 [8].

Note that Ukraine is not the only country in Europe where the following the process of privatization will be carried out.
Gross Domestic Product (GDP) to 7.1% [9]. So, a moratorium on sale of agricultural land development is emphasized by changes in Ukraine.

Note that Ukraine is not the only country in Europe where the following the moratorium was introduced, but it did not last long and the country managed to move on to better market methods of land tenure. The experience of the forming of free agricultural land market of European countries can be divided into two groups: countries with a similar model of management to ours (Bulgaria, Poland, Romania, Hungary), and countries similar to classical western-market model (United Kingdom, Denmark, Spain, Germany, Netherlands, France, Sweden). Analysis of approaches and results of the formation of agricultural land market in Europe, we have pulled together these indexes (table 2), sample calculations based on the economic entity ratio “cost of sale” and “the price of rent” of the land. The price for sale in well developed markets reflects the “capitalization of the rental value of the land”. Thus, countries with low interest rates and more accessible markets loans will have higher prices on the ground. In addition to the interest rate, better protection of the rights of land ownership (for example, the formal registration and control over the execution of the law) also contribute to higher prices. But the distortions (e.g., restrictions on the size of land in ownership or use, restricted access to purchase land, taxes) will reduce the price. The possibility to rent the land and use it as collateral, as well as subsidies to producers can also increase the value of the land and the price. All these factors affect the ratio of rent to prices [10].

Analysis of indicators of the first group showed that all States that had close to Ukrainian economic model that was based on collectivization, held the land reform in the early 1990s by restitution or an allocation of lands with eventual liberalization to foreign capital. All of these economies are gradually introduced or fully open land market, or market with partial restrictions. This transformation has led to a decrease in the share of agriculture in GDP, but caused the growth of profitability and performance of agro sector. We believe that an alternative example among the countries of Central and Eastern Europe are the Balkans and the Baltic States. As a consequence, in these countries the price of land (which is worse than the quality compared to ours) is governed by the basic principles of the market and exceeds the Ukrainian figure several times. Accordingly, the rates are much higher for the rent of land. So, we have $37 in Ukraine, where the land market is frozen by actions of the
moratorium – against $300 in the countries of the former social unit, where there is a mechanism of liberalization and open markets.

In the developed countries of Western Europe, land reform lasted a few decades, but has not been associated with the provision of a full range of landowners’ rights to ownership of private property. The main problem was there to create a balanced market in a post-industrial, attraction of direct investments in the agricultural sector and the motivation of farmers to produce products with high added value. As it can be seen from table 2, the ratio of rent to the price of land in the EU varies from 0.06% to 5.99% (average – 2.01%), which is a positive result. We may conclude that developed countries of the EU coped with this in using the libertarian way by removing all the restrictions on the participation of foreign capital or price regulation. Even in the countries where traditionally influential “Keynesian lobby”, was decided not to be experiment with agriculture and shifted partial regulatory control to local self-government units [11].

### Table 2. Assessment of the status and effectiveness of the use of land in Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Total area (thousand hectare)</th>
<th>The area of arable land (thousand hectare)</th>
<th>The share of agriculture in GDP, %</th>
<th>Land in private property (%)</th>
<th>The share of rented land (%)</th>
<th>The average price of the sold land ($/hectare)</th>
<th>Rents ($/hectare)</th>
<th>The ratio of rent and sale price (%)</th>
<th>Regulation of rents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>11100</td>
<td>3300</td>
<td>5.2</td>
<td>98</td>
<td>90</td>
<td>4650</td>
<td>187.5</td>
<td>4.03</td>
<td>market</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>24290</td>
<td>6200</td>
<td>0.7</td>
<td>90</td>
<td>41</td>
<td>31400</td>
<td>275</td>
<td>0.86</td>
<td>on arbitration</td>
</tr>
<tr>
<td>Denmark</td>
<td>4310</td>
<td>2400</td>
<td>1.4</td>
<td>98</td>
<td>24</td>
<td>26650</td>
<td>725</td>
<td>2.72</td>
<td>market</td>
</tr>
<tr>
<td>Spain</td>
<td>50600</td>
<td>12400</td>
<td>2.5</td>
<td>70</td>
<td>33</td>
<td>16100</td>
<td>225</td>
<td>1.39</td>
<td>local law</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4150</td>
<td>1000</td>
<td>1.1</td>
<td>89</td>
<td>38</td>
<td>63700</td>
<td>625</td>
<td>0.98</td>
<td>law</td>
</tr>
<tr>
<td>Germany</td>
<td>35700</td>
<td>11800</td>
<td>0.4</td>
<td>49</td>
<td>68</td>
<td>32300</td>
<td>219</td>
<td>0.67</td>
<td>law</td>
</tr>
<tr>
<td>Poland</td>
<td>31270</td>
<td>10900</td>
<td>3.2</td>
<td>81</td>
<td>28</td>
<td>10300</td>
<td>314.6</td>
<td>3.05</td>
<td>market</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>1707540</td>
<td>119800</td>
<td>2.4</td>
<td>39</td>
<td>88</td>
<td>1150</td>
<td>37</td>
<td>3.21</td>
<td>law</td>
</tr>
</tbody>
</table>
Taking into account the European experience, we can predict that the development of the market of sale of agricultural land in Ukraine after the removal of the moratorium will be determined by two main factors: the availability of capital and the list of constraints that will be spelled out in the law on circulation of land. Based on this statement we can deny the myths of fear and make some hypotheses about the prospects for liberalization of agricultural land in Ukraine:

1. According to the study of the Kiev International Institute of sociology, only every sixth Ukrainian supports moratorium. Main fears of shares owners are low prices of land, the pressure on the sale of land and fraudulent schemes to purchase, but the paradox lies in the fact that more than ⅔ respondents in General and ⅓ shares owners expect the moratorium will bring benefits to the economy of the State [14]. In fact, it is a moratorium, the high cost of servicing the land bank and difficult access to capital annually "steal" in the 7 million owners of shares up to 90% of potential income. There is a myth that the Ukrainian land market will be passive because of the low income of the owners of agricultural land, who mostly are retirees. The argument of the objections to this hypothesis is that a feature of the market is that a large part of Ukraine is handled not by the owners but tenants. So there are reasons to argue that the land market in Ukraine will not be inert. Probably, the percentage of land that will be the subject of agreements will be higher than in most European countries (perhaps about 5% after the initial stabilization, a liberal regulation after the removal of the moratorium). On the other hand, most of the land deals in other countries are funded by the banks. And in Ukraine land loans are actually there. This factor will restrain demand for land. It is advisable to wait for the large number of transactions in the first 2-3 years after the opening of the market.
sales (5-7% depending on the availability constraints). The reason will become a speculative demand and attempts to legalize previously made informal agreement.

2. There are two opposing hypothesis regarding the rapid growth/decline of prices for land and its lease after the removal of the moratorium in Ukraine. As for prices on agricultural land in the neighboring countries of the EU, they are very different: the highest price recorded in the Netherlands (more than $60,000 per hectare); in most West European countries, prices range from $15,000 to $30,000 per hectare, while in Eastern Europe from $1,000 to $5,000 per hectare. Accordingly, it is expected that the price of land in Ukraine will be significantly lower than in Western countries, however, on the same level of prices as in Eastern Europe. For example, in Romania, which has only recently (at the beginning of 2014) liberalized its market and is very similar to Ukraine for fertility of land, today the average price of hectare is more than $6150. If the ratio of rental rates for land in Ukraine it will be the same as in the EU, we can make a prediction that if for the next 5 years we will be at least at the level of $3500–$5000 per hectare, we will create an asset worth $125 billion [14]. Such a possible economic effect discards all inert fears the owners of the shares.

3. After the abolition of the moratorium, foreign investors and domestic agroholdings will buy the land from peasants for next to nothing. As evidenced by the experience of neighboring countries this myth is a great exaggeration. First of all, the pain is in the first 5-10 years of liberalization as the market is only opened to citizens and legal entities and residents in Poland, Romania, Estonia, the Czech Republic and Slovakia. In Ukrainian bills the similar reservations about the participation of foreign capital in the sale of agricultural land are also planned. Second, is a bad idea not to let foreigners into the market, because it can adversely affect the value of the land and losses the owners of the shares. Just in the same way it happened in the Canadian province of Saskatchewan in 1974, when a province limited the maximum amount of farmland that can be non-resident, the price of land fell by $10-85 per hectare [15].

For hypotheses about the benefit of large domestic holdings everything is contrary. The experience of neighboring countries – Poland, the Czech Republic, Slovakia shows that the free market is an incentive to the development of small and medium-sized agribusiness. One way that promotes the development of farms, is to limit the area of land that can be owned by one person. In Poland, the law limits the
size of land parcels up to 500 hectares, in Hungary – up to 300 hectares, in Slovakia the average size of plots is 0.45 hectares. In Ukraine, the situation is fundamentally different because the price of land sets no market, and it is formed on the basis of the standard evaluation, which can be both lower and higher than the market. The low price of the lease allows the agroholdings to accumulate large areas of land bank. Because of the lack of liberal land market, mechanisms are quite monopolized, that is the 100 largest companies accounted for 6.5 million hectares rented arable land (20% of the land), the range of arable lands in the possession of the loan top-10 companies ranges from 150 to 654 thousand hectares, whereas only 1% of land resources on areas of less than 20 hectares [9].

4. Actually the shadow of land market, associated with the sale of land, exists today. Most often it is evident in the design of “contracts for 50 years and emphyteusis”. According to the latest estimates of the Association “Ukrainian Agribusiness Club” the volume of the market is from 10 to 12 billion UAH a year. And then adopted in 2015 restrictions on the minimum term of the lease at a level of 7 years relocated short-term lease relations in the shadow sector. In addition, over 2 million hectares of land collective ownership and heritage is generally used on the conditions at the time. The presence of contradictions and conflicts of interests of State bodies and bodies of local self-government at different levels of the administration of land relations promote the distrust to them and to the bribery. The results of an independent nationwide survey indicate that a significant number of respondents for solving land issues, paid bribes when they received services in law enforcement agencies (49%), land services (25%), registration and licensing services (22%), courts (21%), tax (18%), municipal enterprises (6%) [16]. Therefore, it is believed that one of the most important consequences of the introduction of a transparent land market will be exactly the settlement rights of ownership and use. Firstly, the owners and users will no longer need to “circumvent paying bribes” moratorium and increase the shadow market. Secondly, those owners who will not be able to handle the ground or will be unprofitable will be able to sell the land to more effective farmer.

Hypothesis that the moratorium on trade of agricultural land will transform Ukraine into a raw appendage of developed EU contradicts economic theory. In a market economy, agricultural land does not have a fixed cost, their price changes under the influence of a large number of factors, the main of which is the profit on the
land (actual or expected) or annuity; the alternative costs of capital; inflation. Therefore, a rational land user or investor who is considering buying a land, compares the cash flow of expected residual income from land with alternative capital costs or alternative income from real estate or financial investments. A potential investor usually optimistically estimates the perspectives of their own economy to increase productivity and yields, so goes on the intensive methods of managing and expanding the range of additional investment. According to IMF, it is estimated that the cancellation of moratorium may already happen in the next 5-10 years direct investment only lead to purchase of land in the $25-50 billion. Approximately the same amount may be granted in the form of financing under the security of land, 85 percent of which can go to the development of the Ukrainian small and medium business in the village. It is important to focus on the fact that when such investment volumes and the corresponding correction of tax issues will appear, tax on agricultural land could annually bring in Ukraine during this period 50-60 billion UAH, tax on transactions with the ground 5-10 billion UAH, taxes from economic activity of related businesses and overall growth of the economic activity of the rural population is still 10-20 billion UAH. As the experience of Europe, free agricultural land market leads to another effect that is the creation of new jobs. The increase in direct investment has a direct effect on increasing the number of employees. There is no standard dependence for all sectors, but in the case of the opening of the market, the following formula will operate: $1 million of additional direct investment brings in about 20-30 additional jobs. Therefore, the cumulative effect in agro sector for the next 10 years may bring about 1-1.5 million jobs.

Conclusions. There is a reason to state that today Ukraine is the only democratic country in the world where landowners have no rights to dispose of their property at their own discretion, cannot give this property as collateral to get funding for farming or any other activity, cannot sell their shares and invest in another activity or asset. The authors do not try to impose a model of development of land market in Ukraine, since none of the new members of the EU took over someone’s experience by copy-paste, we only presented the general trend of the development of the economies of the countries in Europe that are promoted to high social standards and effective production methods through liberalization and freeing the market from the lion’s share of regulatory constraints. This study allows us to affirm that today, all the risks and fears about land market liberalization are minor, compared with the benefits
that Ukraine might have in the coming years. Analysis of international experience shows that the land market reform often was carried out exactly in the period of economic crisis and the liberalization of markets has contributed to the recovery of economies. It has become the impetus for modern Ukraine finally to choose the approach of liberalization of the agricultural land market as the main impetus for the exit from the current crisis and the gradual formation of own models of its functioning, which will be the subject of further researches.

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Development of a simulation model for accomplishing effective policy for logistic services

Abstract: The policy for logistic service appears to be part of the overall organizational policy for customer service, but it is particularly meant for logistic activities accomplishment according to customers’ requirements. The present report studies the various levels of logistic service’s influence on the expenses and effectiveness and the possibilities simulation gives for raising the quality of logistic services and for customers’ satisfaction.

Keywords: logistic servicing, logistic services, simulation, multi-agent systems.

Logistic customer service appears to be the final phase of the logistic activities chain and result of their successful functioning. It is an important element of the organization’s marketing mix as far as it ensures the actual products’ reaching the customers, thus directly influencing the logistic expenses, the profit and the profitability. Logistic customer service might be reviewed as an activity that includes a whole complex of operations and activities such as taking, preparation and fulfill customers’ errands, drawing up the documents for taking and delivering the possessions, reacting to customers’ claims, rendering after-sale services. Regarding
its level, customer service is a criterion for the result out of the logistic services accomplishment [1].

The policy for logistic service appears to be part of the overall organizational policy for customer service, but it is particularly meant for logistic activities accomplishment according to customers’ requirements.

Achieving high level of customers’ logistic service means more sales, more effective use of facilities, equipment and workers’ labour, relatively lower expenses and bigger profit. The well-serviced customers buy regularly and attract more customers and this means potentially bigger sales and revenues from them. In this sense, customer service can influence the demand. Gaining customers’ trust has direct impact on the regularity and the growth of sales, on the advertising activities, on the prices, the income, the expenses and the profit. That is why achieving higher customer service level is a prerequisite for organization’s financial success for a long period.

Logistic service has to be reviewed as process that unifies combination of inter-connected operations, which consecutive execution ensures creation of added value for the consumer. The emphasis, connected to the logistic service process, is directed towards putting particular tasks and the decisions taken for their execution. The added value for the customer might be taken in one deal, but might also be created in the course of a longer period of time in the course of long-term contractual relations. „Added value is common, as far as the added value arises for each of the parties involved in the deal or the contract, and it turns being in better position after their completion than before that. That is why customer service could be defined as process of giving clearly expressed additional benefits to the supply chain participants at the expense of funds effective use” [2].

The significant changes taking place in our country’s economic life, which regard predominantly the economic crisis, exercise strong influence on organizations of any type. Aiming enhancing their competitiveness, the organizations direct their daily efforts towards expenses reduction and quick and adequate reactions appropriate to customers’ requirements. They look for innovative solutions that aim improving the level of customer service, keeping the existing and attracting new customers. Their main task is to beat the competition and to survive at the reduced consumption [3].
On the grounds of the reviewed characteristics of customer logistic service, we can summarize that it appears to be process of rendering services.

In our opinion, logistic services appear to be the final result of the logistic servicing process, which is a complex of elements, activities and operations that are directed towards ensuring quality logistic service.

The aim of the present work is to study the influence of logistic service various levels on the expenses and effectiveness and the possibilities of simulation for raising logistic services quality and customers’ satisfaction.

1. Logistic service influence on the expenses and the effectiveness

The organization expects bigger sales from the increase of expenses for customer logistic service. The sales, however, would be realized, when improvements correspond to the customers’ needs and their abilities and readiness to pay higher price for their better service. Customers estimate improvements in logistic service the organization offers and buy more and more often, but their choice is also influenced by what the competitors offer. No organization can exist and progress if at equal quality and price of the goods and services it offers, it is not at the average level of its competitors regarding customers logistic servicing. That average level of logistic service, however, should be reviewed just as a start. When service level improves and starts exceeding the competitors’ (usually at the cost of bigger innovations and expenses for their introduction), the sales and the income from them grows and this growth anticipates the growth of expenses. This process, however, continues to a certain moment. It is possible that the competitors intervene and make innovations in the customer logistic service, too. This, practically, diverts part of the potential sales and may cause new improvements in logistic service and the connected with it expenses increase. If service improves, sales show trend towards increasing. However, they reach their optimum at certain moment, no matter of the improvements. As a result, the period of logistic service improvements influence and the connected expenses is defined by the initial sales growth until the moment of their hold up at a certain level. It is this period, where sales operative management is of crucial significance in terms of not missing the moment, when the expenses start growing faster than the realized income. (Figure 1) [1].
The graph shows that at lack of service or when its level is low, the share of sales is small or there aren’t any. The sales grow by the service improvement, and together with them the income and expenses grow. The period of logistic service influence on the sales, the income, the expenses and the profit outlines from the starting level to the moment of sales fall. Customer logistic service improvement, together with the sales increase helps for more effective use of the capacity of storehouses and sale places, for stockpile’s turnover acceleration and for reducing the expenses per unit of sales at income and profit grow.

Profit increase continues to a definite critical moment, from which sales start holding up and reducing, despite the level of service. The main reason is that market has saturation limit. As a result, customers cannot derive anymore benefit from the service improvements. From the moment, where the sales volume starts decreasing, while preserving their structure, the income also decreases and sales start bringing loss. The result is that income does not cover the expenses and the sales start bringing loss. In this sense, defining the level of logistic service within its practical realization appears to be major problem as far as it is integral criterion for estimation of efforts and results that concern the service, both on the side of the supplier as well as on the side of the consumer.

It is advisable that this inter-connection between logistic service level, the sales volume, the income, the expenses and the profit to be constantly analyzed and tracked and the results to be used for taking decisions, which to correct the actions.

The decisions in this aspect might include changes in the following directions:
- The structure of supply and the amount and structure of the kept stockpile;
- The transport service;
The elements of customer logistic service, differentiated by types – before, in the time of and after the bargain;

Limiting or extending of serviced market segments, etc.

Each change of that kind, however, leads to logistic system balance disturbance and imposes the launching of appropriate changes in its elements in terms of its effective functioning.

The period after 2008, which we define as period of economic crisis, has quite a negative impact upon the economic activity of mainly the small and medium enterprises in the country. The main problem is connected to their limited financial possibilities because of the lack of markets; delayed payments on the behalf of the customers; the inflation, the credit owing.

Offering logistic service conformable with customers’ desires requires ensuring the necessary investments and resources for improving and for maintaining its quality.

That is why it is advisable to look for ways for improving the offered logistic service quality, but with fewer expenses, while, at the same time, keeping or increasing customers’ satisfaction. In our opinion, simulation methods aiming optimization suggest such possibilities.

2. Simulation model for logistic service optimization

The simulation aims to demonstrate the influence of logistic service company policy on customers’ satisfaction.

**Task formulation:** A package of ten types of logistic services is developed – automobile transport; storing; consolidation, fragmentation, complementing; packing, unpacking, re-packing; labeling; cutting into pieces, cutting out, half-finished material; service; delivery on site; assembly on site; consultant services.

Each one of them could be performed at five different quality levels, each level having certain price. The lowest level is “zero” and actually means lack of the relevant type of service.

The company policy regarding logistic service is expressed mainly by offering the logistic services at certain levels. Few **versions** are possible:

- The company offers fixed package of fixed levels for all logistic services without considering the needs and financial abilities of its customers;
The company offers several packages of logistic services, fixed at different levels. For example – one package with low levels of logistic activities and respectively and low price; a second one – with services and prices at medium level and a third one, offering the highest quality of services, but respectively at the highest price;

- The company elaborates the logistic services package flexibly according to the expectations and financial abilities of each customer.

Each customer has certain expectations for the logistic services levels offered by the company and is ready to pay certain price for them. Customer’s satisfaction is defined by the number of logistic services the company offers at a level corresponding or higher than his expectations. Maximum satisfaction is received when all services are offered at a level not lower than his expectations and at price within his financial abilities.

The so called „multi agent systems” are used for the simulation realization [4].

The following types of agents are formed with that aim:

- Agent “customer” – his goal is to get services according his expectations. They are generated as random integers within the interval (0 ... 4) with uniform probability. This value presents the level of the particular service. Accordingly, the agent “customer” has resource at his disposal – certain amount of money he is ready to give in order to get the necessary service. Separate customers’ available resource is also generated as random number, but according to the regular law with expected value the value of services, according to the customer’s desires. The customer’s satisfaction from the logistic service is presented as number within the interval (-1 ... 1), where it has a value of 0 at first. Negative values correspond to the level of unsatisfaction by the logistic service.

- Agent „company” offers to its customers services from the elaborated package, according to the company policy.

It is necessary to review the algorithms the separate companies function after.

Company of type A. When a customer arrives in the company, it offers fixed package of services at a fixed price. Firs, verification whether the customer has sufficient financial resource to be able to afford the package of services is conducted. If not, he leaves not serviced, and with full unsatisfaction (value -1). If his financial
possibilities are sufficient, the levels of separate services, offered by the company, are to be compared to the customer’s expectations. If the company offers higher or equal to the expectations level, the customer’s satisfaction increases by 0.1. Otherwise, the satisfaction decreases by the same value. Thus, if all services correspond or are at a higher than the customer’s expectations level, he would get out of the company with maximum satisfaction (value 1). If all services are at lower level than his expectations – the customer’s satisfaction would be at the minimal possible value -1.

**Company of type B.** It offers several fixed packages at fixed prices. In this case the algorithm for customer service simulation is the following: First, is checked whether the customer has at his disposal sufficient financial resource to be able to afford the cheapest package. If not, like the companies from type A he leaves not serviced and fully unsatisfied (-1). Is his financial possibilities are bigger, the next value package is checked. After defining the package with closest but lower than the customer’s possibilities value, the included logistic services are compared to the customer’s desires and, like with the companies from type A, his satisfaction is defined.

**Companies of type C.** There the logistic services package is put together according to the customer’s desire. The company checks each separate customer’s desire and puts together services package for each customer individually, so to satisfy his requirements. If the customer’s money is not enough to cover his expectations, the level of the most expensive service is taken down. This approach works well for the particular task formulation, because customers’ satisfaction does not depend in any way on the spent financial resources. Reducing the price of the biggest value package, corresponding to the most expensive service, makes it most probable to reach the price the customer could afford by one-two reductions. The goal is to look for such a logistic services package configuration that is close to customer’s expectations to the maximum and at the same time, to be within his financial possibilities. Thus, customers’ satisfaction is maximized.

**The simulation essence** lies in generating certain number of customers, their service by companies of various types and analysis of the received results about their satisfaction. The simulation model is realized with numerical computing environment Matlab. The code of all functions and procedures is shown in Appendix 2.

In order to avoid substantial random deviations, 500 customers are generated the way described above and each one of them is serviced by the three types of companies, i.e. the same 500 customers go through each type of company.
Results:

Let us look at a version for a company of type A, where the package offered by it includes same levels for all logistic services.

Figure 2 shows a histogram of consumers’ satisfaction, when all services are at zero level, i.e. the company does not offer additional logistic services. It is clearly seen from Figure 2 that almost all consumers have negative satisfaction, which shows that the offered level does not comply with the customers’ expectations.

Figures 3, 4, 5 and 6 show the histograms of consumers’ satisfaction, when the offered services package is respectively at levels 1, 2, 3 and 4, and Table 1 shows the average value and the root mean square deviation of consumers’ satisfaction for the various packages.
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Figure 4. Histogram of consumers’ satisfaction for a company of type A at offered services level 2

Figure 5. Histogram of consumers’ satisfaction for a company of type A at offered services level 3

Figure 6. Histogram of consumers’ satisfaction for a company of type A at offered services level 4
Table 1. Average Value and Root Mean Square Deviation of Consumer’s Satisfaction for Various Fixed Levels of Packages for a Company of Type A

<table>
<thead>
<tr>
<th>Level</th>
<th>Average Value</th>
<th>Root Mean Square Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-0.6084</td>
<td>0.2494</td>
</tr>
<tr>
<td>1</td>
<td>-0.2788</td>
<td>0.3167</td>
</tr>
<tr>
<td>2</td>
<td>-0.5280</td>
<td>0.5280</td>
</tr>
<tr>
<td>3</td>
<td>-0.9528</td>
<td>0.2481</td>
</tr>
<tr>
<td>4</td>
<td>-1</td>
<td>0</td>
</tr>
</tbody>
</table>

The most successful for the company is the option with 1st level of services but even then, more than half of the customers are with negative satisfaction and, as it is seen from the table, its average value is -0.28.

With the offered services level growing, the number of completely unsatisfied customers grow, in addition, which is explained by the fact that they cannot afford the expensive services. It is seen from the data that if the company offers the maximum level 4 with the highest price of services (Figure 6), all customers are completely unsatisfied. This is due to the fact that nobody expects such a level and has not planned sufficient finances in order to realize it.

A company of type B offers three packages and let’s accept that the services level in each of them is the same. The results received about the consumer satisfaction in various options for packages forming are shown on Figures 7, 8, 9 and 10 and in Table 2.

Figure 7. Histogram of consumers’ satisfaction for a company of type B at offered services level 0-1-2
The most successful for the company is the option with 1st level of services but even then, more than half of the customers are with negative satisfaction and, as it is seen from the table, its average value is -0.28.

With the offered services level growing, the number of completely unsatisfied customers grow, in addition, which is explained by the fact that they cannot afford the expensive services. It is seen from the data that if the company offers the maximum level 4 with the highest price of services (Figure 6), all customers are completely unsatisfied. This is due to the fact that nobody expects such a level and has not planned sufficient finances in order to realize it.

A company of type B offers three packages and let's accept that the services level in each of them is the same. The results received about the consumer satisfaction in various options for packages forming are shown on Figures 7, 8, 9 and 10 and in Table 2.
Table 2. Average Value and Root Mean Square Deviation of Consumer’s Satisfaction for Various Packages for a Company of Type B

<table>
<thead>
<tr>
<th>Levels in the Packages</th>
<th>0-1-2</th>
<th>1-2-3</th>
<th>2-3-4</th>
<th>0-2-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Value</td>
<td>-0,0588</td>
<td>-0,0748</td>
<td>-0,5112</td>
<td>-0,2624</td>
</tr>
<tr>
<td>Average Root Mean</td>
<td>0,2503</td>
<td>0,3217</td>
<td>0,5475</td>
<td>0,3515</td>
</tr>
<tr>
<td>Square Deviation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The suggested options could be reviewed as:

- **0-1-2** – low-value packages, which include the lower services levels of lower prices respectively. It is seen from the histogram (Figure 7) that the customers’ satisfaction is relatively equally distributed in the positive and in the negative zone, and it is seen from Table 2 that the expected value regarding these packages is practically 0.

- **1-2-3** – medium packages, which include the medium levels of the offered service, although the average value of satisfaction is a little bit lower that the one of the previous set of packages. The Figure 8 histogram shows that in this case the customers having positive satisfaction are more.

- **2-3-4** – high-value set of packages, which includes the high and expensive levels of the offered services. It is seen from the Figure 9 histogram that more than half of the customers are completely unsatisfied, which is due to the fact that they do not have sufficient financial funds in order to be able to afford some of the offered packages. It is seen from the table that the average value of satisfaction drops to -0,51. Hence, such a set of packages is not an appropriate choice for company policy.

- **0-2-4** – set of packages, which includes the whole scope of offered services levels. The Figure 10 histogram shows that only about 1/3 of the customers get in the positive satisfaction zone, and the average value (see Table 2) is -0,26.

It is seen from the presented data that the most appropriate option for the company and for its customers is a set of packages 1-2-3, where a company from type B would have considerably better results than a company of type A. Despite that, great part of the customers stays in the area of unsatisfaction.

Figure 11 shows a histogram of the customer satisfaction for a company of type C. The company functions as it is described above and puts together its services packages flexibly according to each customer's desires. It is clearly seen from the graph that almost half of the customers are completely satisfied (value 1),
and practically all are in the area of positive values. The expected value and the root mean square deviation of customer satisfaction for this type of company is respectively $0.8684$ and $0.1467$.

![Figure 11. Histogram of customer satisfaction for company of type C](image)

The lack of complete satisfaction in all customers is due to the fact that part of them do not have sufficient financial resource in order to fulfill their expectations.

The following **conclusions** could be made on the grounds of the conducted simulation:

- Companies that do not show flexibility towards their customers’ requirements (type A) can, at the best, achieve satisfaction in less than half of their customers.
- The supply of limited volume of logistic services (type B) leads to better results, but almost half of the customers stay unsatisfied.
- At complete compliance with consumers’ needs and requirements (type C), the result is that all customers are satisfied to a great extent and almost half of them – completely.

**In conclusion**, we should generalize that enterprises realize the significance of logistic service as a source of competitive advantages and purposefully exert efforts for improving its quality.

Enterprises realize the necessity of developing and offering various levels of logistic service because of the great competition, of customers’ increased requirements and of their various financial possibilities. There is, however, lack of application of scientific optimization and simulation methods.
Enterprises understand their focus should be the customer. However, skills for elaboration and realization of integral marketing programmes for management of the relations with the customers are still missing.

The supply of logistic service complied with customers’ desires requires ensuring the necessary investments and resources for improving and keeping its quality. The economic crisis period (after 2008) affects negatively the economic activity of mainly the small and medium enterprises in the country. The main problem is connected with their limited financial possibilities. Simulation methods offer solutions for increasing logistic service quality and customers’ satisfaction, but with fewer expenses.

The influence of logistic service company’s policy on customers’ satisfaction could be measured through the developed simulation model based on “multi-agent systems”.

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A brief analysis of the defence expenditure of the Republic of Bulgaria

Abstract: The complex state of the Bulgarian economy is a prerequisite for the state of defence and security. The low GDP, low production, unemployment, the outflow of young people and professionals abroad are a prerequisite for the few resources allocated to defence. Contrary to all expectations of Bulgarian society defence spending did not only remain the same, but decreased significantly as a percentage of gross domestic product and reached unbelievable level of 1.35 for 2014.

Bulgaria and its Armed Forces are facing the challenge of available critical shortage of financial resources. It continues to stand a heavy task to find an optimal balance between available resources and planned defence capabilities. The budget of the Ministry of Defence is insufficient for realization of the planned.

According to the Objectives of the Administration for 2015, the Ministry of Defence is needed to support purpose of existing and the gradual development of new defence where the capabilities including modernization of equipment to acquire new abilities and keeping Bulgarian Army with highly motivated and professional people.

The Programme for the Development of the Defence Capabilities of the Armed Forces of the Republic of Bulgaria 2020 has been developed pursuant to Article 16, paragraphs 6 and 7 of the Law on Defence and the Armed Forces of the Republic of Bulgaria. The Programme is aimed at continuing and further developing the process of strategic rethink of the defence policy and the build-up of the defence capabilities...
that was initiated by the White Paper on Defence and the Armed Forces of the Republic of Bulgaria. This document sets out the parameters for the development as well as the central guidelines for the build-up of the Bulgarian Armed Forces' defence capabilities until 2020 through harnessing the political, economic, technological, information, military and civil resources of our country.

Keywords: national security, defense technology, strategic management.

Introduction

The complex state of the Bulgarian economy is a prerequisite for the state of defence and security. The low GDP, low production, unemployment, the outflow of young people and professionals abroad are a prerequisite for the few resources allocated to defence. Contrary to all expectations of Bulgarian society defence spending did not only remain the same, but decreased significantly as a percentage of gross domestic product and reached unbelievable level of 1.35 for 2014. General view point of personnel involved in activities in defence of the country is that the lack of money to invest in infrastructure, logistics, equipment, armament, and people reduce abilities of Bulgarian Army to be adequate for future military actions. Reforms in the army during the last 10 years related solely to reduce costs in all possible directions. The minimum investments in facilities and equipment, the missing funds for the maintenance of existing assets, and the minimum investments in people discourages staff working in this field. Legislation in recent months suggests reduction of wages and social benefits for people, increasing the retirement age, the abolition of the wages that are applied at the time of retirement of the officers.

Below it is made an attempt for a short review of the legislation in the field of defence mechanisms for the stabilization of the costs of different directions, and state defence spending by type of forces to 2014 and a review of state defence spending by different defence policies. It was made a review of certain documents aimed at future of defence costs and the vision of the Ministry of Defence for future cost trends.

1. Synopsis of the legislation on investment in defence technology, infrastructure and people in the Republic of Bulgaria 2010-2015

There are different documents carried out on the principle of planning based on capabilities. The application of this approach examines the necessary and the lack of capabilities and takes note of the obsolete ones. According to White Paper on
Defence and the Armed Forces of the Republic of Bulgaria one of the leading priorities of Bulgarian defence policy is the future development of an integral system of effective defence governance under uninterrupted public control, with a great potential of flexibility, planning and effective response. This entails the application of contemporary defence management, founded on principles of good governance and planning, based on the operational capabilities of the forces and the possible scenarios for their use.

In theory Republic of Bulgaria has a relatively constant share of GDP for the Ministry of Defence budget - no less than 1.5%, and including other defence expenses and the expenses of military pensions - not less than 2%. In practice it reached 1.35% for 2014.

The national defence capabilities were structured in a "Catalogue of capabilities for the development of the Armed Forces of the Republic of Bulgaria". For the maintenance and development of necessary capabilities, the total number of the Armed Forces can be no less than 37,000 - of those the military on active duty 73% and the civilian personnel 19%.¹

The aim was to bring down the expenses on personal staff, on-going maintenance and capital expenditure in the ratio 60:25:15. These proportions were considered by our government in 2010 as closest to the best management practices in the defence organisations. As a result of the reforms and with a fixed defence budget of 1.5% of GDP, we should to secure a significantly greater quality of support and greater per capita funding on military personnel - rising from 29,000 lv. (approx. €15,000) to 43,600 lv. (approx. €22,300) per serviceman. It was a proposed prognosis for 2014 and should consequently result in modern equipping and arming, as well as a greater level of battle readiness and efficiency. But in fact this reduction and the the reforms didn’t allow the best management of the personnel and modernisation of the Bulgarian Armed Forces.

According to the Law on Defence and Armed Forces of the Republic Bulgaria, Art. 13. funds for the activities in the field of defence is performed by the state budget and other sources provided by law, or in the Council of Ministers.²

For financial support of its activities, the Ministry of Defence prepare a budget, which is part of the state budget. On the revenue side of the budget of the Ministry of

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² Law on Defence and Armed Forces of the Republic Bulgaria, Prom. SG. 35 of 12.05.2009, in force from 12.05.2009, amend. and suppl., SG. 1 of 3.01.2014.
Defence are funds from fees, fines; services, rental and sale of real estate and assets granted for management of the Ministry; income from the use and disposal of objects of intellectual property of the Ministry; donations; other sources.

According to the Regulations for Implementing the Law on Defence and Armed Forces of the Republic of Bulgaria Art. 1. The regulations relating to the conditions and procedures for acceptance of military service, as well as the acquisition and enhancement of the military qualifications of the persons admitted to the military service.3

In Chapter Seven of the National Defence Strategy of the Republic of Bulgaria are pointed the following resources for defence:4

- Human resources, development of which requires organizational establishment of the Armed Forces building and design of offices; building the structures of the management of human resources; construction and preparation of the reserve; attracting, recruitment and selection of staff; training; evaluation / appraisal; career and staff development; payment; social partnership; social adaptation of exemptions soldiers.

- Material resources, development of which requires to change system of military logistics.

- Information resources, the priority of which is the development, reconstruction and modernization of communication and information system in the field of mobile tactical communications, ensuring interoperability and management of formations in modern combat environment.

- Financial resources. According to the commitments of the Bulgarian government commitments regarding full membership in NATO, the cost of the Ministry of Defence must be maintained at a relatively constant level not less than 1.5% of gross domestic product and the inclusion of other costs for defence and costs of military pensions - not less than 2%.

The Ministry of Defence had to provide the Armed Forces with adequate infrastructure of different types, to satisfy their basic needs and to correspond to the operational, tactical and technical requirements for the deployment of military forces. A significant part of the housing stock is need of major repairs. Limited financial

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3 Regulations for Implementing the Law on Defence and Armed Forces of the Republic of Bulgaria, adopted by decree 46 from 22.03.2010, Prom. Issue 25 of 30.03.2010 pcs. 40 of 2.06.2015, effective from 2.06.2015.
resources for the maintenance and repair of infrastructure are the reason for the severe depreciation of a great part of it and for the impossibility to use it.

In relation to the force structure review and the Force Development Plan, by the end of 2014, we significantly decreased the total size of military areas.

*People are the main potential* and guarantee for the success in any defence matter, so we should to provide the defence system and the Armed Forces with trained and motivated staff. In this context, the mission of the Reserve forces will be to promptly provide ready personnel and equipment, with which to increase the capabilities of the Armed Forces' formations and, when required, to carry out their tasks both in peace and in wartime.

Ensuring the long-term budget of the Ministry of Defence as a higher percentage of the GDP will provide conditions for establishment and maintenance of the operational capabilities our army's needs. Taking into account the experience and recommendations of our allies, the programming structure of the Ministry of Defence was updated. Consequently the number of programmes was reduced. With them we must increase the effectiveness and efficiency in planning and spending of our limited budgetary resources.

The Bulgarian defence industry and research & development are primarily a result of 20th century investments. The expenses of research and development led to a sharp reduction of the sector's export potential and to its reduced contribution to the Bulgarian economy, which has a significant negative impact on national security. If this state of the Bulgarian technological and industrial defence base remains, the industry's potential to meet the future material requirements of the Armed Forces will be reduced evermore progressively. Investing in new technologies will provide upgraded capabilities for both the progress of the Armed Forces and the transformation of the Bulgarian defence industry into a competitive participant into the global world.

Ambitions of the **Investment Plan-Program of the Ministry of Defence to 2020** is to bring order and transparency in the spending of capital funds from the budget of the Ministry of Defence and to identify the main directions for the modernization of the Bulgarian Army, and to achieve a balance between the needs and capabilities of the available resources.

The investment plan's main objective is to ensure the acquisition of abilities for development of Bulgarian Army, forming an integrated framework of capital
expenditure, including acquisition, integrated logistic support, decommissioning weapons and/or modernization of armaments, equipment and defence infrastructure through the implementation of investment and infrastructure projects.

Herein is the scope of the investment plan:

- Investment projects (IP);
- Projects which will be implemented in case of financial resources;
- Program funded by the US to assist in the field of security and defence;
- Infrastructure projects;
- Infrastructure projects funded by NATO.

The investment program plan is consistent with the following assumption: providing a framework annual budget of 1.5% of GDP for its implementation. Total for 2011-2020 forecast funds for capital costs must be amounted to 2 billion lev.5

Some of the The Republic of Bulgaria Armed Forces’ Development Plan goals are:

- To create an integrated system for the effective management of defence with a flexible planning and effective-response potential.
- To secure the preservation of existing necessary capabilities, the development of missing capabilities, the discarding of unnecessary capabilities and the creation of conditions for the evolutionary progression of the Armed Forces.
- To achieve balance between necessary skills and available resources.
- The transformation of combat maintenance and support.

Following the reorganisation of the Bulgarian Army's staff and military units, according to the Republic of Bulgaria Armed Forces' Development Plan its personnel will be no less than 26,100 and 3,150 reservists. The personnel will be categorised as follows:6

- military personnel - no less than 23,720
- civilian personnel - up to 2,380
- reservists - up to 3,150.

Manning the Armed Forces with main armaments and military equipment includes equipping:

5 Investment Plan-Program of the Ministry of Defence to 2020, Sofia, 2011.
• Land Forces with tanks, combat armoured vehicles, and artillery systems
• Air Force with military aircraft, transport aircraft, training aircraft, combat helicopters, transport helicopters, training helicopters, air defence battalion, and radar systems
• Navy with combat ships, combat support ships, auxiliary ships, floating crafts and installations, and helicopters.

The creation of new and development of existing capabilities are pointed at timely availability for effective intelligence, deployability and mobility, command, control and communications, logistics, survivability and force protection. The process of the armed forces' development will continue to be supported in accordance with NATO’s defence planning and the capability development process in the EU. Building and maintaining capabilities remains a priority for the Armed Forces.


Bulgaria and its Armed Forces are facing the challenge of available critical shortage of financial resources. It continues to stand a heavy task to find an optimal balance between available resources and planned defence capabilities. The budget of the Ministry of Defence is insufficient for realization of the planned.

As is well-known in 2006 NATO approved a 2% of GDP to be allocated to defence spending, with 20% of them are dedicated to research, development and acquisition of major weapons systems. NATO countries made a commitment to stop the reduction of defence budgets. With a commitment to invest in defence, the Allies confirmed that the countries that are below specified values will stop cost reduction. But the majority of member states do not fulfil their commitments. Indicative is the example of Bulgaria, where a percentage of gross domestic product which is paid for defence for the period 2007-2014 dropped from 2.3% to 1.35%.

In terms of defence spending devoted to basic systems weapons and military equipment, Bulgaria is one of the member countries with the worst indicators - about 2%. Regarding the indicator – „Defence spending“, in 2014 the implementation of this measure of Bulgaria (1.35%) is below the required is for 2% of GDP on defence, and modernization are separated by only 1.38% defence budget.\(^7\) This is a sure indicator of destructive processes.

Three-year budget forecast spending on defence (1.19% of GDP for 2015, 1.16% -for 2016 and 1.12% for 2017) confirms the negative trend to reduce the military budget, which would deepen resource issues of the Armed Forces and significantly reduces the opportunities for acquisition of military equipment, weapons, equipment and gear.

The budget of the Ministry of Defence for 2014 does not ensure the implementation in full of the following key activities of the Armed Forces:

- Maintenance of equipment, provision of fuel and lubricants to conduct flight training of staff in NATO standards, subscription maintenance of armaments and equipment and repair of buildings;
- Projects for acquisition of armaments, equipment and equipment battalion battle group formations and the modernization of forces;
- Maintenance, construction and the affirmation of the logistics;
- Disposal of surplus weapons, ammunition, explosive devices;
- Repair and protection of basic infrastructure and others.

In 2014, the actual total cost to the budget of the Ministry of Defence amounted to 1 101,563 thousand levs in 1 067.444 thousand lev for Ministry of Defence and 34,119 thousand levs for state military schools. This represents 1.35% of GDP. Without the cost of public higher military schools, the budget of the Ministry of Defence constitutes 1.31% of the projected gross domestic product. The figure represented the ratio of budget expenditures on defence as a percentage of gross domestic product for the period 2010 - 2014.

Within the budget of the Ministry of Defence implemented two policies – „Defence capabilities“ and „Allied and international security“.

Expenditures on policy „Defence capabilities“ has amounted to 998 747,869 thousand levs, as is shown in Table 1.

<table>
<thead>
<tr>
<th>MAIN PROGRAM</th>
<th>Consumed (thousand levs)</th>
<th>% from the total cost of the MoD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preparation and use of Armed Forces</td>
<td>743 539,577</td>
<td>69,66</td>
</tr>
</tbody>
</table>

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Policy „Allied and international security“ spent funds amounting to 68 696 363 thousand levs, or 6.44% of the expenditure of the Ministry of Defence are allocated to support key policy programs 4 and 10, as is shown in Table. The main objective of this policy is to participate in NATO and EU policies of security and defence and to contribute adequate to their realization.

**Table 2. Expenditures on Policy „Allied and International Security“**

<table>
<thead>
<tr>
<th>MAIN PROGRAM</th>
<th>Consumed (thousand levs)</th>
<th>% from the total cost of the MoD</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Membership in NATO, European Union and International Cooperation</td>
<td>28 780 238</td>
<td>2.70</td>
</tr>
<tr>
<td>10. Military Information</td>
<td>39 916 125</td>
<td>3.74</td>
</tr>
</tbody>
</table>

In 2014 in the Ministry of Defence in 2014 has been carried out in public procurement, resulting in 116 contracts, 9 framework agreements and 18 additional agreements which were signed for the supply of equipment, goods and provision of services in the following areas:

- Completion of Bulgarian troops and troop formations with weapons, equipment and individual equipment, clothing, shoes and others;
- Supplies of fuels, oils, lubricants and special liquids for the training;
- Supply of tires and batteries for the preparation of military units of the Bulgarian army;
- Others.

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Accumulated over the years delay in the implementation of projects for modernization, led to a delay in necessary defence capabilities and difficulties to maintain already achieved.

In the field of *defence infrastructure* was implemented in three main directions: 1) management of real state property; 2) investment policy regarding construction and construction services, and 3) housing policy. For investment policy in the field of construction and building services were prepared annual reports on the implementation of the program 9.2. "Defence Infrastructure". For the performance of a list for the development and construction services in the Ministry of Defence and the Bulgarian Army were conducted 30 procedures for construction and consulting services under the procurement and selection of contractors.

Considering the changes in the strategic environment and security priorities in the medium term the *acquisition of new capacities and modernization* of the Armed Forces in 2014 were defined areas of capability and set the following priorities in the *investment projects*:¹¹

- New type of basic, multipurpose combat aircraft;
- Providing logistic support;
- Modernization of the frigates class E-71;
- Building a battalion battle groups;
- New 3D radars;
- Modular patrol boat;
- Technical guidance systems of Strategic Intelligence;
- Cyber protection;
- Others.

To 31.12.2014 the personnel of the Bulgarian Army is 90% of the permanent staff, distributed as follows:

- Ministry of Defence - 97%;
- Structures directly subordinate to the Minister of Defence - 90%;
- Bulgarian Army - 90%.

As a negative trend we can mention that if the Bulgarian Army keep the status quo with the number of its personnel, in the future years the officers to 35 years and

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¹¹ **Report on the state of Defence and Armed Forces of the Republic of Bulgaria for 2014, the Council of Ministers, Sofia, 2015.**
civilian people in the Army will be insufficient for the needs of the peacetime and war formations.

The activities of the Plan for development of the Armed Forces in its part of the **Land Forces** were aimed at: building the available financial resources; maintenance and improvement of acquired skills and build new ones; introduction of modern methods of education and training (trainers and simulators); release of unnecessary infrastructure.

The main problems in the preparation and execution of the tasks and missions of the formations of the Land Forces are directed to insufficient funding and poor state of armaments and equipment.

There is a significant imbalance between the levels of spending in different directions of the expenditures of the budget of the Land Forces as is shown in Figure 2.

Insufficient maintenance expenditure and low levels of capital expenditure led to an accumulation of problems that affect the defence capabilities. The lack of components, consumables, tools and accessories for weapons and machines leads to operational problems. Obviously there are difficulties in providing the Land Forces with the necessary equipment for personal.

The completed activities by **Air Forces** were assisting the population in case of floods, air transport of medical teams and sick people, search and rescue, fighting fires from the air and ensure activities of state bodies and local authorities.

![Figure 2. Imbalance in the levels of expenditures in the directions of the Land Forces](image-url)
The main challenges facing the Air Force in 2014 were related to the execution of the tasks under budgetary constraints. The actual level of funds for capital expenditure is far below the required values, especially for maintenance and repair of aviation equipment and infrastructure. Insufficient capital expenditures and impossibility of real modernization lead to serious problems in the provision of units.

There is a significant imbalance between the levels of spending in different directions of the expenditures of the budget as is shown in Figure 3.

Like other branches of the Armed Forces, insufficient defence spending in the country (as a percentage of gross domestic product, and cash), causing an imbalance in the levels of the directions of the cost to the budget of the Navy, especially the section on capital expenditures. For this reason, logistics and maintenance operations involving the preparation and daily activities are carried out in conditions of shortage of financial and material resources.

The distribution of the directions of the expenditures to the budget of the Naval Forces is shown in Figure 4.
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![Figure 3. Imbalance in the levels of expeditures in the directions of the Air Forces](image)

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![Figure 4. Imbalance in the levels of expeditures in the directions of the Naval Forces](image)

The total distribution of the directions of the expeditures to the budget of the Forces and imbalance in the levels of spending in directions of Bulgarian Armed Forces is shown in Figure 5.

![Figure 5. Imbalance in the levels of spending in directions of Bulgarian Armed Forces](image)

The usability of the Armed Forces is one of the main indicators that take into account the actual contribution of the Armed Forces to NATO's operations. It is the main indicator of the degree of implementation of commitments to collective defence.
There are 3 groups of indicators to measure assistance the Alliance in building the necessary capacities and actual involvement in missions and operations.

1. group - Input indicators measure levels of defence investment;
2. group - Outgoing measures, taking into account the contribution to the development of capabilities;
3. group - Outgoing measures, taking into account the actual contribution to NATO.

First of the metrics illustrate the possibility of participation in operations and missions outside the territory of the country. According to it in 2014, in the Land Forces, our country managed to surpass these levels, while the Air Force and the Navy Force are significantly lagging behind.

Second key indicator is estimated capacity of countries to support the participation of formations and abilities in operations for long periods of time. By this indicator Land Forces is above stated requirements. There is a decline in the proportion of the Air Force and Navy, which for financial reasons hardly maintain the ability to participate in continuous operations.

In the third group are metrics that take into account a percentage of the staff of the Land Forces, the aircraft of the Air Force and Navy ships from a country which are provided for participation in expeditionary operations and those which are actually involved in the operations. They reported participation of Bulgaria in operations, including in such NATO and other multilateral (UN, EU coalition) and national operations.


According to the Objectives of the Administration for 2015, the Ministry of Defence is needed to support purpose of existing and the gradual development of new defence where the capabilities including modernization of equipment to acquire new abilities and keeping Bulgarian Army with highly motivated and professional people.12

Doctrine of the Armed Forces of the Republic of Bulgaria points some priorities in the field of financing. Herein are pointed:13

- Maintenance and Operations Support;

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12 Objectives of the Administration for 2015, the Ministry of Defence, Sofia, 2014.
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The Programme for the Development of the Defence Capabilities of the Armed Forces of the Republic of Bulgaria 2020 has been developed pursuant to Article 16, paragraphs 6 and 7 of the Law on Defence and the Armed Forces of the Republic of Bulgaria. The Programme is aimed at continuing and further developing the process of strategic rethink of the defence policy and the build-up of the defence capabilities that was initiated by the White Paper on Defence and the Armed Forces of the Republic of Bulgaria. This document sets out the parameters for the development as well as the central guidelines for the build-up of the Bulgarian Armed Forces.
Forces' defence capabilities until 2020 through harnessing the political, economic, technological, information, military and civil resources of our country.

As we know the allies will make an annual assessment of the progress made in the implementation on the basis of the adopted 11 indicators.

Indicators measuring the levels of defence investments: 14

1. The percentage of GDP for defence. The nations that have achieved 2% and more for defence have to continue maintaining this level.

2. The percentage of the defence spending is to be allocated to the acquisition of core armaments, combat equipment, and outfits, including research and development. The requirement with respect to this indicator is for the nations to achieve the required level of 20% and more within 10 years.

Indicators measuring the contribution to capability development: 15

1. The percentage of the execution of quantitative and qualitative indices of the national goals.

2. The percentage of the Land Forces personnel, the aircraft of the Air Force and the ships of the Navy having displacement more than 300 tons represented as a part of their respective total number, which are allocated and meet all requirements for participation in operations outside the territory of the country: the requirements are for Land Forces - 50%, for the Air Force - 40% and for the Navy - 80%.

3. The proportion measured in percentages of the Land Forces personnel, the number of the aircraft of the Air Force, and the ships of the Navy having displacement of more than 300 tons, presented as a part of their total number for each individual category, which are sustainable in operations outside the national borders of the country. The requirements are respectively: for the Land Forces - 10%, for the Air Force - 8% and for the Navy - 28%.

The Armed Forces capabilities must be also directed to the optimization of the organizational structures of the Bulgarian Army. Herein are included: capabilities and structure of the Joint Forces Command (JFC), capabilities and structure of the Land Forces, capabilities and structure of the Air Force, Navy capabilities and structure, command and control system of the Armed Forces, system for communications and information support of the Armed Forces, military intelligence and capabilities for

intelligence support of the forces, capabilities and structure of the system for logistic support of the troops and forces, military medical support of the Armed Forces, Military Police, military-geographic support of defence activities, cyber defence, military scientific support for defence, reserve of the Armed Forces, defence infrastructure, to build an effective system of armaments and equipment acquisition.

As was mentioned the main source of the Armed Forces defence capabilities funding is the state budget. In the course of the implementation of the annual State Budget Acts, additional spending may be approved under the terms and conditions of the Public Finance Act.

In order to achieve optimal balance between required defence capabilities and the execution of the Armed Forces' missions and tasks, in the period 2018-2024 we envisage a gradual increase of the defence spending\textsuperscript{16}, depending on the growth of the economic capacity of our country, in accordance with the decisions made at the NATO Summit in Wales (2014).

Under the conditions of highly inadequate funding as a priority we will provide with defence resources, including with financial resources, the Deployment Forces, immediate response units, the declared forces and capabilities under CT-2013 for NATO, and the declared forces for the European Common Security and Defence Policy as well as the military units for participation in operations outside/in the territory of the country.

According to the approved Act State Budget of the Republic of Bulgaria for 2015 expenses by policy and / or budget plans in the budget of the Ministry of Defence 2015 can be pointed indicators by individual budget programs. The individual budget programs for 2015 are as follows:\textsuperscript{17}

1. **Policy of defence capabilities**
   - Budget program „Preparation and Use of the Armed Forces“;
   - Budget program „Management of human resources and reserves“;
   - Budget program „Military Police“;
   - Budget program „Medical Support“;
   - Budget program „Military-patriotic education and military Recreation“;
   - Budget program „Research and Technology“;


\textsuperscript{17} Act State Budget of the Republic of Bulgaria for 2015 expenses by policy and / or budget plans in the budget of the Ministry of Defence, Sofia, 2015.
• Budget program „Military Education“;
• Budget program „Administrative Management and Support“.

2. Policy of the Allied and International Security
• Budget program „Membership in NATO and the EU and international cooperation“;
• Budget program „Military Information“.

Figure 6 shows the planned costs on individual budget programs on Policy of defence capabilities of Ministry of Defence of Bulgaria for 2015 in levs.

Figure 7 shows the planned costs on Policy on the Allied and International Security of Ministry of Defence of Bulgaria by different budget programs for 2015 in levs.

In order to achieve the necessary defence capabilities of the armed forces, the human resource management system must provide the Armed Forces with well-prepared and motivated personnel. Herein is included: selection - attractiveness of the military profession, professional and career development, education, science and training, updating the existing legislation, and care for the people in defence.

Conclusion
The article was an attempt to show the main pieces of legislation and mechanisms on the costs of defence of the Republic of Bulgaria. Data were derived in 2014 under certain budgetary policies and budgetary programs on them. They were derived data on the status of the costs of separate armed forces as follows – Land Forces, Air Forces and Naval Forces.
Figure 6 shows the planned costs on individual budget programs on Policy of defence capabilities for 2015 in levs.

Figure 7 shows the planned costs on Policy on the Allied and International Security of Ministry of Defence of Bulgaria by different budget programs for 2015 in levs.

Personnel costs, ongoing subsistence, and capital expenditure for 2015 stand at a ratio of 73:21:6. The ratio of the above expenses to be reached over the period 2020 - 2024 is targeted at 60:20:20.18

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References:
4. Law on Defence and Armed Forces of the Republic Bulgaria, Prom. SG. 35 of 12.05.2009, in force from 12.05. 2009, ... amend. and suppl., SG. 1 of 3.01.2014.
11. Regulations for Implementing the Law on Defence and Armed Forces of the Republic of Bulgaria, adopted by decree 46 from 22.03.2010, Prom. Issue 25 of 30.03.2010 ... pcs. 40 of 2.06.2015, effective from 2.06.2015.


Harmonization of Ukrainian labor legislation according with acquis communautaire

Abstract: The article proves the necessity of harmonization of the Ukrainian labor legislation in accordance with acquis communautaire. The main legal acts in the sphere of Ukrainian labor legislation are analyzed. Special attention in the article is devoted to the critics of the Draft Labor Code of Ukraine, also marked its contradictions, positive sides and shortcomings are indicated. The conditions necessary for the successful implementation of international labor standards and principles in Ukrainian national law are proposed.

Keywords: labor legislation, labor law, Labor Code of Ukraine, implementation of international labor standards, acquis communautaire.

Introduction. At the present stage of our country's priority is the practical realization of the objectives of long-term strategy, which should provide a solid foundation of Ukraine as highly, social in its essence, democratic state, its integration into the global economic process as a country with competitive economics, able to solve the challenges of development. This should aim all institutional transformations undertaken policy of economic, social and humanitarian reforms. It should be noted that the first steps in this direction have been carried out in 2004 with the approval of the “On the State Program for Adaptation of Ukrainian Legislation to the Legislation of the European Union” [1], which defines the mechanism of harmonization of the Ukrainian legal system in accordance with acquis communautaire. One of the
important directions of this program is to harmonize Ukrainian labor laws, which consist of the Labor Code, adopted in 1971 in the former USSR.

Analysis of recent research and publications. Many Ukrainian scientists are engaged in the analysis, definition of the status and study problems of adaptation (harmonization) Ukrainian labor legislation to the system of international rules on the protection of labor rights. Among them Venediktov V. [2], Hetmantseva N. [3], Grekova M. [4], Hurash V. [5], Zolotukhina L. [6], Lazor V. [7], Pylypenko P. [8], Khutoryan N. [9], Chanysheva G. [10] and others. The research findings of economists and lawyers are substantial and significant. Venediktov V. describes research undertaken in the field of labor law as rational for new approaches to modernize regulation of labor relations and labor law reform of Ukraine as a whole. However, he notes that the state does not pay any attention to the results of scientific research, therefore, has a number of significant problems associated with the implementation of economic and social reform, and modern labor relations [11, p. 135].

In economic researches, legal security of employment, labor capacity and labor sphere occupies a small place, but their value is to determine the economic, institutional and social relations that are suffering due to lack of legal regulation or because of its imperfections. Among these researches the results of Zaloznova J. [12], Levchenko O. [13], Novikova O. [14], Shaulska L. [15] are most informative.

The main material. Ukrainian modern labor laws is the result of adapting old rules of the former socialist legislation to the conditions of market transformations taking place in our country. The conceptual position of the Soviet norms and principles were based by the Soviet legislator on the specific for socialist system normative theory of law. This theory based on the Marxist definition of law as elevated to the law of the will of the ruling class, which by its nature intended to suppress the interests of the lower classes. So, according to the normative doctrine, all laws were recognized as legal, regardless of their content, and consequently, the right and law were generalized. The Soviet right was established according to the legal norms that were created by the Soviet government, that were argued that the state was primary and the right was secondary. Labor laws not were exception and were also formed on normative theory of law [16].

However, in spite of the distorted understanding by the Soviet legislator of the nature of labor rights, the existing Ukrainian labor standards are humanistic and are
aimed at protecting the rights and legitimate interests of employees. But, Ukraine's transition to a market economy, its integration into the world economic system, changes in political orientation and reorientation of the legislation on the use of naturally-legal doctrine, require new approaches to the concept of law in general and labor law in particular.

Note that since independence of Ukraine, labor laws were constantly in the process of reforming and adapting labor standards to international standards. The process of harmonization of Ukrainian legislation with international legal standards on the protection of labor rights is over such a long time because of the following reasons:

Firstly, the worldview of a number of officials who shape human rights policy based on normative stereotypes of the Soviet period.

Secondly, there are differences of historical, social and cultural development of legal systems.

Thirdly, the current complicated bureaucratic system in Ukraine and high level of corruption by officials.

Therefore, we are sure that the Ukrainian labor legislation besides legal problems also has economic and political problems. Since independence, the power is being changed in Ukraine, and with it the political concept of labor law, which influenced the formation of this branch of national law, in resulting labor principles and standards are constantly changing.

State protection of employers is also problematic for the process of adapting national labor standards to international norms of law. Employers have an impact on the formation of discriminatory legislation for workers by restricting or insufficiently regulating the forms and methods of protecting their workers' rights while at the same time enhancing the guarantees of employers' rights.

That is why, we consider that modification of the Soviet norms and principles of labor legislation is not needed in Ukraine. The creation of new labor laws that would meet the requirements of modern times and a common civilization values is needed. Such modifications, in our opinion, can take place only in the application of legal and technical means to ensure compliance of national legislation with international law and EU norms. These means are positive reception such as inclusion in national legislation international law norms unchanged and negative reception such as elimination of norms that do not conform to international laws. One
of the forms of law harmonization is the ratification of international treaties and the creation of national standards of prolonged nature.

Since 1954 Ukraine is a member of the International Labor Organization (ILO) and assumes the obligation arising from the very fact of membership in the Organization to respect, to promote and to realize, in good faith and in accordance with principles relating to defined in the ILO Declaration on Fundamental Principles and Rights at Work [17].

Today, in Ukraine, with the support of the ILO in the framework of technical cooperation "Ukraine: the promotion of fundamental principles and rights at work", the process of reforming of labor legislation, which is attended by experts, representatives of trade unions, employers, academics and international experts, is actively being conducted. As part of this process, the codification of national labour law is the essential step for realizing harmonization with international and European legislation.

Ukraine has not ratified all the ILO conventions yet. At the same time, it should be emphasized that it is impossible to change the law by applying a strong-willed approach or also to get closer it with a similar one that is taken from another social environment. Harmonization of the legislation presupposes either the existence of objective conditions for the rapprochement of relations in various fields or the existence of grounds for it. That is, the right only either creates incentives, or arranges the already existing conditions. Due to absence of this, none legal approach will not ensure harmonization. In this regard, the ILO Director-General stresses that "each system of labor relations derives from historical, political, economic, social and cultural experience and determines its own rules of the game within its parameters" [18, p. 31-32].

The Draft Labor Code of Ukraine (The Draft LCU) [19], approved November 5, 2015 in the first reading by the Verkhovna Rada of Ukraine, is focused on the European Social Charter, the Universal Declaration of Human Rights, The International Covenant on Economic, Social and Cultural Rights (ICESCR) and Conventions of the International Labor Organization which were ratified by Ukraine. The Draft LCU conceptually redefines the mechanism of legal regulation of labor relations between employer and employee, as well as the basic principles and mechanisms of implementation are provided by the Constitution of Ukraine and guarantees of labor rights of workers, the establishment of appropriate working
conditions and protecting the interests of workers and employers in a market economy.

The Draft LCU will make changes of a large number of labor norms. This legal act retained the rate of 40-hour workweek with 5 working days. However, the employer can set a 6-day working week or 10-hour day but if the amount is not to exceed 40 hours per week. In addition, there was a provision of so-called flexible work functions that can increase employee’s obligations. This means that the employer can add duties when workload is too small and does not provide full employment. There is another important point: workers can be employed at the weekend without their agreement. In addition, work is allowed during state and religious holidays, if it is provided in the employment contract.

Positive changes in The Draft LCU are associated with additional payment for work at night, which will be 30% as opposed to 20% that is now. In addition, salaries in overtime will be increased not twice, but in three times. Minimum duration of vacation is increased from 24 to 28 days a year, such a rule spelled out in The European Social Charter. The duration of unpaid vacation for family reasons is also significantly increased from a maximum of 15 days up to three months. However, the right for vacation is narrowed for those who want to get a degree. Additional vacation is provided only if the employer is interested in sending their employees for studying [20, p. 57-58].

The issue of compliance with working and pension age in Ukraine is still open. There are an inconsistency between the categories "unemployed", "working age", "economically active population". According to the Law of Ukraine "On Employment of Population" [21]: “unemployed” is a person aged 15 up to 70 years, who is due to the lack of work has no earnings or other stipulated by the legislation income as sources of livelihood, and who is ready and able to start work. In Article 26 of the Law of Ukraine "On Mandatory State Pension Insurance" [22] is specified: “people of working age” are people aged 16 years up to under the age for women - 60 years, for men - 65 years. Under the ILO definition [23]: "Economically active population" comprises all persons of either sex who furnish the supply of labour for all production and processing of primary products whether for the market for barter or for own consumption, the production of all other goods and services for the market and, in the case of households which produce such goods and services for the market, the corresponding production for own consumption during a specified time-reference
Economically active population comprises of the employed and unemployed. Thus, persons engaged in economic activity are persons who are aged from 15 up to 70 years. There are contradictions in the laws according to the age at which a person is considered unemployed aged 15 years and older with age at which a person is in the working age from 16 years and older. And the contradiction between the age at which a person achieves the retirement age of 60-65 years old and the age till which a person is considered unemployed up to 70 years old.

Article 86 of The Draft LCU also requires further improvement. It concerns about the possibility of an employee dismissal in connection with reduction under the conditions of economic, technological, structural, organizational nature and the formal grounds, such as liquidation, merger, division, transformation, conversion without real production necessity. International instruments, in particular ILO Convention No. 158 [24], protect rights of employees upon termination of employment at the initiative of the employer. Under the Convention (article 4) "the employment of a worker shall not be terminated unless there is a valid reason for such termination connected with the capacity or conduct of the worker or based on the operational requirements of the undertaking, establishment or service".

Although The Draft LCU has not been adopted yet, scientists and trade unions have already expressed opinions of about its partial imperfection and of needs to introduce a large number of amendments. There is the need to apply scientific recommendations about direct solving labor conflicts and to develop of regulatory acts regulating the relations of employees and employers in accordance with international legal norms and with taking into account their historical analysis [25, p. 86].

We think that the main problems of the establishment of such situation in Ukraine are:

Firstly, the lack of regulation of the labor laws and related lows that punish employers for violations of certain labor rights. Although Article 172 of The Criminal Code of Ukraine sets liability for gross violation of labor law, but it does not define the very definition of "gross violation of labor legislation", which would have to follow certain grounds for prosecution of this type of responsibility.

Secondly, adoption by the legislator of a number of discriminatory employment normative legal acts. Consequently, in the process of reforming the labor legislation
of Ukraine there is a threatening tendency to adopt norms aimed at minimizing the forms and means of protecting labor rights.

Particularly dangerous for the protection of labor rights in Ukraine is the lack of regulation of activity of trade unions, which are the main representational authority of employees. In Ukraine, there is a problem of protecting the classical labor rights of employees, the main reason for this is absence of regulation or insufficient regulation of labor laws that provide for the employer's liability for violation of certain labor rights.

In particular, the ability to protect the interests of workers will be limited by the adoption of The Draft LCU, because will be allowed employers independently to regulate labor relations by adopting their own regulatory enactments. It is a threat that the chapter XVI of the current Labor Code of Ukraine "Guarantees of Trade Union Activities to Protect Labor and Socio-Economic Rights of Workers" is completely deleted from this document. This is the fact that threatens to eliminate the organizational and legal mechanism for securing the rights of trade union members enshrined in the Law of Ukraine "On Trade Unions, Their Rights and Guarantees of Activity", other special normative acts and relevant international legal acts. In accordance with Article 398 of The Draft LCU, the State Labor Inspection will be authorized to consider only issues of violation of the labor rights of an individual employee. And the same time it will not be authorized to consider the violation of labor rights of trade unions or other employees' associations.

However, despite these contradictions, we consider that The Draft LCU contains some positive features they are:

- frees of ideological stereotypes and declarative norms of the Soviet system legislation;
- responds to the socio-economic and cultural processes of modernity;
- organizes all labor standards and principles of Ukraine and international labor laws into one system;
- prescribes in detail powers of state and local authorities in the field of labor relations.

In addition, one of the important aspects of adaptation of Ukraine's legislation to the EU laws is labor protection acts. The legislation of Ukraine concerning the health and safety needs serious reform. According to the annual implementation plan for The State Program for Adaptation of Ukrainian Legislation to the Legislation of the
European Union [1] in the sphere of labor protection is necessary to carry out the following steps:

1) to develop and approve the indicators required to ensure the safety and protection of health of workers;

2) to develop drafts of legal acts concerning: general requirements regarding the provision by employers of labour protection of workers; the rules of labor protection of workers of the mining industry; occupational safety rules when performing work on board fishing vessels; requirements to employers regarding protection of workers from harmful exposure to chemicals (heavy metals and compounds);

3) ratification of ILO Convention No. 184: Safety and health in agriculture;

4) direct implementation of EU directives in the field of labor protection.

The modification of the national labor legislation is an inalienable process of fulfilling the state's international obligations and implementing the global co-ordination of Ukraine’s labor law with international labor standards stemming from the ratified and universal conventions of the United Nations, ILO, and the EU regional norms. It should also be noted that by acquiring in 1995 membership in the Council of Europe, Ukraine has ratified the main acts of this institution such as European Convention on Human Rights (ECHR) and European Social Charter (revised).

It is also important that the legislators ratified a fundamental European legal act as The European Convention on the Legal Status of Migrant Workers [26] and was involved in the process of universalization of European labor law, which largely represents the right of European states, combining international legal Confederate and federal features that is a complex nature and is dynamic. Scientists point out the fact that Ukraine has taken "a lot of new legislation that subject to the provisions of international law and modern achievements legal provision qualitatively strengthened safeguards to protect the rights and freedoms of our citizens and the state thereby acquires the characteristics of a legal state" [27 p. 10].

**Conclusions.** Summing up the above, it should be noted that the current Ukrainian labor legislation is the result of adaptation of socialist norms to market economy and globalization, and therefore does not meet the requirements of international labor law. The analysis adopted in first reading of The Draft LCU allows us to see its benefits and significant drawbacks. It is positive that The Draft LCU has collected all the labor laws, which are currently contained in various legal acts and
this will greatly facilitate the procedure of their application. At the same time, many of the rules of The Draft LCU are discriminatory and such that worsen the forms and ways of protection of labor rights in Ukraine.

For the implementation of international norms and principles of work, Ukraine should create conditions for their perception in the national legislation, in particular, there is a need to establish a clear legal framework that will determine the specific order of adaptation, application, realization of international laws. With the implementation of international labor standards should take into account the nature of the national legal system, the economy, the level of culture, historical features and traditions, as a result effectiveness of international labor standards will be increased and will be revealed their beneficial influence on labor relations in Ukraine.

The development of national legislation toward its convergence with the EU legislation will help to create a market-oriented social legislation in Ukraine. This will ensure the development of political, business, social and cultural activities of citizens of Ukraine, the economic development of the state, as well as a gradual increase in the welfare of citizens, bringing it closer to the level existing in the EU member states.

The experience of states that carried out profound transformations has provided insight that the real success of transformation processes is possible only when reforms and their results meet the interests and aspirations of broad sections of the population and receive sufficient public support.

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The specificity and contradictions of agrarian reform in post-socialist countries

Abstract: Analyzed the content and results of agricultural transformation in Central and Eastern Europe, the specific features and patterns of agrarian reforms. Established contradictions transformations carried out in the agricultural sector post-socialist countries.

Keywords: agricultural sector contradictions, privatization, liberalization, transition economy.

Agricultural transformation in Central and Eastern Europe have both similarities and national characteristics. Studying the experience of market reforms in the agricultural sector in these countries is essential to identify trends and patterns of agrarian transformations in the countries of post-socialist camp, which will develop a balanced strategy of further market reforms in the agrarian sector of Ukraine and better take into account while negative factors that occurred in the conditions of transformation processes in the agriculture economies in transition.

Significant contribution to the study of patterns and characteristics of market transformation of the agricultural sector of transition countries have such scientists as I. Lukinov, V. Husakov, M. Zubets, V. Zhlinskyy, P. Sabluk, O. Onyshchenko, T. Ostashko, M. Malik, V. Mesel-Veselyak, H. Cherevko, O. Shpychak, V. Yurchyshyn and others. But still scarcely explored issues related to the identification and analysis of socio-economic contradictions in transitional economies and their reflection in economic theory and economic policy.

Purpose - to investigate the background, characteristics and results of market transformation in the agricultural sector of Central and Eastern Europe, identify patterns and inconsistencies held transformations.
The need for agricultural transformation in post-socialist countries was caused by two factors: first, the inadequacy of the existing structure of agriculture requirements of the new macroeconomic environment, high level of state support for the agricultural sector and its low economic efficiency; Secondly, the loss of food markets within the Council for Mutual Economic Assistance - closed market socialist countries. In this context, the aim of reforms in the agricultural sector post-socialist countries was its transformation into a market-oriented economy. To achieve these goals were set the following objectives: restructuring the agricultural sector, land privatization and reorganization of former agricultural enterprises - collective and state farms; formation of market infrastructure, market liberalization, privatization I and III in the areas of agribusiness; the formation of a new state agri-food policy.

In carrying out agrarian reform was common opinion that the starting point and the main this reform should be the transformation of land relations, introduction of private land ownership, forming farms. As the experience of the reforms, this idea was plausible only for countries where the agricultural sector was the main sector of the economy and the share of rural population and the share of employed in agriculture were high. In most of these countries there was a low level of average food consumption and the high proportion of food costs in the cost structure of households. The dominant were primitive technology based on manual labor, which included involvement in a large number of agricultural labor force. In such economies of distribution of land among the peasants led to an increase in agricultural production and a corresponding increase in the level of food consumption. This was due to two factors: 1) increase motivation peasants and 2) the fact that the main agricultural markets were local rural markets that do not require a developed market infrastructure.

As for countries with industrial or industrial-agrarian economy, the holding of land reform are not always clearly led to an increase in agricultural production and food consumption level of the average population. This is due to the fact that in these countries, the agricultural sector has held the top spot in their economies dominated urban rather than rural population, the share of employment in agriculture was low in agricultural production in these countries used more advanced technology, more advanced infrastructure and food was like. In this regard, the increase motivation of farmers and members of the farms are not always technical losses that occur during the transition from technologies that use large agricultural enterprise to technologies
used by farmers. In addition, since the structure of the population predominantly
urban population growth in food production and consumption in rural areas has not
led to a significant increase of the average national food consumption. No role in this
was played and the lack of post-socialist countries new industrial system of food
distribution.

However, land reform was carried out in all post-socialist countries. As a result
of its socialist system of agriculture was reorganized, and in all countries formed
farming sector. However, in some countries, farmers were the main agricultural
producers - Latviya, Romania, China and others. In other countries - they have
become so popular - Czech Republic, Slovakia, Russia and others. That agrarian
reform led countries to dominate the structure of the agricultural sector, households
and farms. Regarding industrial and industrial-agricultural countries, the
transformation of land relations in almost all of them ended in the formation of
market-oriented agricultural enterprises, including various kinds of industrial
cooparatives. However, in all countries decreased the size of the vast majority of
farms several times. Then there was a reduction and commercialization of their
production, while increasing rural unemployment [8, pp. 345-346].

In addition, the agricultural countries (Albania, Romania, China) almost
immediately after the land reforms began in the growth of agricultural production,
while in the industrial and industrial and agricultural post-socialist countries (Russia,
Bulgaria, Estonia, and others.) Growth started to occur much later. In our opinion,
this is due to the adaptation of farms to new market conditions [8, p. 347].

However, common to all post-socialist countries is that as a result of restitution
in most of the land remained in the use of those who cultivated (mainly due to the
distribution of land lease). Almost all countries during the land reform followed the
concept of transfer (for a fee or free of charge) ground workers and retirees farm. In
many countries, this allocation was arbitrary, with no personalization holdings. The
most radical privatization was carried out in Armenia and Georgia, where without
exception agricultural lands were divided into family plots. In Central and Eastern
Europe combined with the distribution of land restitution. Moreover, since the
collective farms in these countries created as a voluntary association of peasant
holdings, which are legally kept in private property of their holders, in the course of
restitution returned no ownership and use rights. The only exceptions are the Baltic
countries, where restitution was carried out according to the documents proving ownership of the land to the 1940s.

In general, post-socialist countries have used two main approaches to the transformation of property relations. The first approach was involved in Central Europe and the Baltic states, which in the reform focused on adapting to the conditions of joining the EU. Therefore, they were characterized by a combination of government regulation of systemic change in the economy of a gradual build-up of the role of self-market elements; discard the leading role of state ownership and gradually bringing its share to the level of developed countries; increasing the share of foreign ownership; forming a layer of small and medium businesses and others.

The second approach was carried out post-Soviet states. A striking example of this model transformation is a Russian model. As we know, privatization in Russia was carried out in three phases - voucher (1992-1994), money (1995-1997) and restructuring and redistribution of property in favor of stronger economic structures based on spontaneous competition or through the use of administrative resources (since 1998). Voucher privatization will not serve to the main part of the Russians to the source of primitive accumulation of capital due to the low price of property certificates. Instead, it gave unlimited possibility of moving the hands of other owners of vouchers and shares, which stimulated a massive sale of low profitability of most businesses. However, managers were able to gradually mastering controlling stakes through their gradual redemption of their employees. The characteristic features of the Russian model were: direct intervention of public authorities in decisions on privatization in the interests of oligarchs and those close to them; spread their privatization model in the interests of regional elites; high level of criminalization of the privatization process.

That state structures of post-socialist countries in their actions in practice often supported the formation of monopolies. As a result, the formation economic forms. There was no understanding that private property by itself, without the state and its policy does not provide a competitive business environment. Accordingly, in these countries there formalization of private property. Thus, the formal owners of the land were farmers, but actually their own lands and receive income newly created farms or purely business structures, so-called agricultural holdings.

Thus, in all post-socialist countries were legally enshrined right to private land ownership, although not all countries currently functioning land market. In almost all
counclas of agricultural land owned by the state. Most countries have restrictions on the amount of land that can be owned by one family.

Along with the transformation of agrarian relations, acquired distribution processes stratification of the rural population. Thus, the Polish scientist I. Kovacs identifies four main areas of formation of new values in rural areas. These are: 1) "bourgeoisification" i.e., forming a group of owners and entrepreneurs; 2) "ose-lyanyuvannya" that most newly farms focused mainly on self-sufficiency; 3) proletarianization covering that part of the rural population, which in terms of transformation of agricultural jobs lost in agriculture and outside it; 4) the emergence owners and workers, shareholders are not able to organize economic activity [5, p. 80].

Important elements of agrarian reform in post-socialist countries were demonopolization and privatization I and III areas of agriculture, which the reforms were in the hands of a few state monopolies. In these areas of privatization in post-socialist countries have used two approaches: 1) the sale of businesses in general terms in accordance with the law on privatization in these countries; and 2) special scheme privatization aforementioned objects, which provide benefits to farmers buying them.

As for agro policy, price liberalization and the abolition of food subsidies in post-socialist countries led to an increase in price disparity between II and I and III areas of agriculture. This situation resulted from the fact that input prices for agriculture began to grow faster inflation, while a rise in food prices lost the race because of inflation fall in effective demand. This situation led to lower revenues for agricultural producers leaching of working capital and loss of mass. The situation further complicated by the absence of the existing market infrastructure that led to growth of transaction costs of agricultural enterprises.

Not in favor of farmers and there were changes in the credit sector. Inflation caused the increase in interest rates on loans and reduction of terms of granting borrowers. In such circumstances, post-socialist countries have resorted to these measures, interest rate subsidies; providing state guarantees bank loans; the cancellation or debt restructuring; creation of specialized credit institutions for the agricultural sector.

In fact, scientists are three stages of evolution of agri-food policy post-socialist countries. The first phase associated with the liberalization of prices, refusal of
planning in agricultural production, reduction of state order (or cancel it), the abolition of benefits for agriculture, the introduction of export quotas on certain products subsidized imports more. The second stage began a policy of agricultural protectionism. At this time, national agencies created to regulate markets, introduce minimum guaranteed prices, import tariffs, quotas, export subsidies and so on. The third stage involves the adjustment of the agri-food policy aspirants for EU membership in accordance with the principles of the Common Agricultural Policy of the EU.

Thus, for the post-socialist countries in transition economies characterized by the following features: unstable economic conditions; deformation of economic structure; shortage of material and financial resources, social restrictions; emerging institutional structure; partial or complete loss of control macroeconomic processes; distorted pricing system; monopolization I and III areas of agriculture, inflation; Simultaneous availability of economic and organizational forms characteristic as a command economic system and market economy and so on. In such circumstances, the primary function of economic policy is to create conditions for the transition to the market and its development.

Accordingly, the main contradiction in transition economies is that, on the one hand, it is necessary to carry out privatization in the agricultural sector, and on the other hand, it requires state action to create the conditions for the transition to a market economy. Go to the market in terms of withdrawal of the state from creating appropriate institutional environment, as the experience of reforms in Eastern Europe, causes the formation of state-monopoly form of market and distribution of illegal private economic activity (criminal, shadow).

The success of agrarian reform depends on the sequence of their complexity and the overall macroeconomic situation. Improved stability reform improves access to capital markets, technologies, stimulate entrepreneurial initiative. In addition, it can achieve high performance of agricultural enterprises in de-stimulating macroeconomic conditions. In parallel with the reform of agricultural structures should be conducted reform of economic and administrative management. Because no new institutional environment, the preservation of traditional methods and principles of management leading to a functioning farm in the usual mode these non-market because market incentives do not work.
The most conservative factor in reforming the agricultural sector is the mentality of people. She herself is one of the main factors that determine the duration of the reforms.

Land reform is not a sufficient condition for economic reforms in the country. Much more important element of agrarian reform is institutional, which should be aimed at reforms in all spheres of agriculture and creation of a favorable business environment.

References:
Innovative activity and dynamic of economic development: innovativeness of Y.A. Shumpeter

Abstract: The approaches to the definition of the innovations are examined, some aspects of the evolutionary nature of J.A. Shumpeter’s heritage and its impact on the peculiarities of the scientific thinking concerning the innovation process’s basic elements are analyzed. Topicality is explained by the creation of the global information society and the incipience of the new technological production method.

Keywords: global information society, innovation, innovation process, “knowledge-based economy”, innovation model.
вого тисячоліття знаменується створенням глобального інформаційного суспільства, становленням нового технологічного способу виробництва, характеризується переходом від ресурсно-затратного типу економічного розвитку до інноваційного. Головним ресурсом ефективно функціонуючих систем господарювання стають творчі, інноваційні здібності людей, інтелектуальний капітал. Інноваційний шлях розвитку передбачає взаємозалежне ефективне функціонування науково-технічної, виробничої, фінансової, соціальної, мотиваційної, духовної сфер, природного середовища життєдіяльності людини та важливих суспільних інститутів.

Дослідження основних параметрів та наслідків інновацій з позицій встановлення їх зв’язків з характеристиками науково-технологічного розвитку є актуальним завданням у контексті врахування цих параметрів для встановлення ефективних механізмів запровадження інноваційної моделі розвитку, а також її адаптації до сучасних тенденцій інтернаціоналізації.

Аналіз останніх досліджень і публікацій. Необхідність зростання наукової активності щодо дослідження інновацій, інноваційного процесу та його складових дедалі глибше обґрунтовується вітчизняними та зарубіжними економістами-науковцями. Окремі аспекти цієї проблематики розглядали такі науковці, як Я. Воронецький, Б. Готц-Гарт, Б. Данилишин, П. Кларк, С.Кортум, Ч. Купер, С. Міхнева, С. Мочерний, Дж. С. Паркер, Р. Патора, Б.Санто, Л. Семів, О. Соснін, І. Шумпетер. Щодо зарубіжних наукових досліджень, де проаналізовані різні аспекти наукової творчості Й. Шумпетера, слід відзначити насамперед праці відомих американських учених В. Баумоля, А. Хіртьє, Т. Маккроу, К. Фримена та Ф. Луки, в яких досліджуються інновації, підприємництво, підприємницький прибуток, “творче саморуйнування” капіталізму та ін. [1-4]. Питання інноваційного підприємництва, шумпетерівського підприємця, взаємозв’язку економічних систем і технічного прогресу, розвитку економічної теорії у світлі концепцій ученого розглянуті в працях А. Чухна [5], Я. Корнаї [6] та В. Маевського [7].

Формулювання цілей статті. Основними завданнями дослідження є дослідження еволюційного характеру теоретичної спадщини Й. А. Шумпетера, її впливу на особливості формування наукової думки щодо основних елементів інноваційної діяльності в процесі економічного розвитку.

Викладення основного матеріалу дослідження. Як показує досвід світового господарства XIX-XX ст., основою проривів в економічному розвитку бу-
ли революційні зміни у способі виробництва матеріальних благ та задоволенні зростаючих через нововведення потреб населення. Початок XXI ст. характеризується трансформаціями, які визначають параметри глобального соціального порядку і зумовлені тими технологічними зрушеннями, що розпочалися три десятиліття тому [8, с. 164; 9; 10, с. 23-88].

Сучасна технологічна революція спирається на знання, у тому числі на інформаційно-комунікаційні технології (information & communication technologies – ICT). Зміни, які несе ця революція, є настільки глибокими, що з’явився навіть термін "нова економіка", одним з головних атрибутів якої є знання як головний чинник виробництва і генерування багатства.

Іншим терміном, який з’явився спідом за прогресуючими змінами, є поняття "економіки, яка ґрунтується на знаннях" (knowledge-based economy – КВЕ). У цьому представленні економіка визначається як "така, що безпосередньо базується на виробництві, розподілі і використанні знань та інформації" [11-12; 13, с. 7-47].

Нове соціально-економічне, духовне наповнення отримує поняття інновацій в умовах зростаючого впливу глобалізації, яка відбувається на тлі переходу від індустріальної до постіндустріальної стадії економічного розвитку. В умовах глобалізації вибудовується нова модель сучасного економічного розвитку, в основі якої лежить здатність суспільства формувати, розповсюджувати, застосовувати знання, генерувати нове знання. Поняття "економіки, базованої на знаннях" (knowledge-based economy) або "інтелектуальної економіки", означає визнання того, що наукові знання і спеціалізовані унікальні навички людини стають головним джерелом і ключовим фактором розвитку матеріального і нематеріального виробництва, забезпечення сталого економічного розвитку [14, 15].

Врахування тенденцій постіндустріального суспільства, в якому знання як "колективне благо" стає фактором інновацій, дозволяє розширити трактування інновацій у інноваційному процесі. Останній не може розглядатися тільки в межах технократичної парадигми, а інновації, які творяться знаннями вже не можуть обмежитися тільки сферою підприємницької діяльності. Інновації виникають в усіх сферах діяльності людини – політиці, мистецтві, охороні оточуючого середовища, працересурсній, освітній, духовній сферах [16, с. 8; 17].

У світовій економічній літературі поняття "інновація" інтерпретується як перетворення потенційних можливостей НТП на реальні нововведення, втілені
в нових продуктах і технологіях. За образним виразом Дж. Паркера, відбувається перетворення багатообіймових технічних можливостей в ринкову дійсність [18].

Відповідно до стандартів і рекомендацій міжнародних організацій в галузі статистики науки, інновація – це кінцевий результат інноваційної діяльності, втілений у новий або вдосконаленний продукт, упроваджений на ринку; новий чи вдосконаленний технологічний процес, який використовують у практичній діяльності; або в новому підході до соціальних послуг [19, с. 99-133].

За теорією австрійського економіста Й. Шумпетера, інновація в буквальному перекладі означає впровадження наукового відкриття, технологічного винаходу. В широкому ж розумінні до інновацій належать процедури та засоби, за допомогою яких наукове відкриття реалізується в економічних нововведениях. Тобто виникає необхідність у тих видах діяльності, які забезпечують упровадження ідей нововведення, а також формування системи управління цим процесом. Під новацією розуміється нове, що близько до поняття винаходу. Між появою новації та перетворенням її на інновацію спливає певний час.

Й. Шумпетер у своїх роботах “Теорія економічного розвитку” (1912 р.) та “Капіталізм, соціалізм і демократія” (1942 р.) виділяв п’ять типових інноваційних змін:

1. впровадження товару, з яким споживачі ще не знайомі, або нового різновиду якогось товару;
2. впровадження методу виробництва, який ще не випробуваний у відповідній галузі;
3. відкриття нового ринку, на якому та чи інша галузь національного виробництва не була присутня, незалежно від того, чи існував до цього цей ринок або його не було;
4. опанування нового джерела сировини або напівфабрикатів незалежно від того, чи існувало вже це джерело або ж воно тільки було створене;
5. проведення нової організації будь-якої промисловості, наприклад, за новою позиції монополіста або її втрати [20, с. 60].

У своїй теорії Й. Шумпетер обґрунтовував провідну роль інновацій в процесі економічного розвитку, яке відбувається за рахунок не тільки збільшення національних запасів і засобів виробництва, а й власного перерозподілу виробничих засобів, що належать старим комбінаціям, на користь нових. “Під розвитком бу-
демо розуміти тільки такі зміни в економічному житті, які не впливають на нього зовні, а походять від його власної ініціативи, тобто зсередини”.

За твердженням Й. Шумпетера, головним критерієм успіху економіки є здатність до розширення виробництва, насамперед, унаслідок нововведень. Хоча останні і можуть спричиняти серйозні порушення в наявних економічних відносинах, але у кінцевому рахунку вони призводять до вигоди для всього суспільства [20, с. 63]. З часом це поняття набуло більш широкого змісту. Якщо раніше воно застосовувалося головним чином у галузі технології виробництва, то зараз використовується для означення нових форм торгової політики, управління конкурентоспроможності соціально-цивілізації до іншого, була обґрунтована в інноваційній теорії Й.Шумпетера, що докорінно змінив традиційні уявлення про економічний розвиток та економічні зміни на економічне зростання.

Згідно з теорією Й. Шумпетера, інновація супроводжується творчим руйнуванням економічної системи, зумовлюючи її перехід з одного стану в інший. Важливим положенням теорії при здійсненні нововведень є впровадження нових комбінацій, тобто інновацій. Свою теорію економічного росту Дж. фон Неймана, який взагалі не враховував технічний прогрес як фактор економічного зростання Й. Шумпетер протиставив теорії економічного росту Дж. фон Калецкі, дослідження Шмуклера, які розглядали зміни на економічне зростання як невичерпні винахідливість, технополісів, проведення політики ресурсозбереження, інтелектуалізації всіх сфер діяльності людини. Перелік можливих сфер використання інновацій та сфер їх використання невичерпний, а з іншого – унеможливлюють продовження цього розширення в традиційних напрямах. Інновації „розхитують” економічну рівновагу, вносять розлад та невизначеність у економічну динаміку [21].

Значення робіт Й. Шумпетера особливо актуально на сучасному етапі реформування економічної науки після глобальної кризи. Лауреат Нобелівської премії з економіки Джозеф Стірлінг відзначає, що важливим моментом у теорії інновацій Й. Шумпетера є твердження про розвиток конкуренції за інновації: “Існувала конкуренція за ринки збуту, а не конкуренція на ринках, і ця конкурентна боротьба велася за допомогою інновацій” [22]. У сучасному світі інновації стають визначальним фактором динамічного розвитку, трансформації та конкурентоспроможності соціально-економічних систем у всьому світовому просторі.

Інноваційний тип розвитку характеризується перенесенням акценту з науково-технічних рішень на використання принципово нових прогресивних технологій, переходом до випуску високотехнологічної продукції, прогресивними ор-
ганізаційними і управлінськими рішеннями в інноваційній діяльності, що стосується як мікро-, так і макроекономічних процесів розвитку – створення технопарків, технологій, проведення політики ресурсозбереження, інтелектуалізації всієї виробничої діяльності.

Необхідність технологічних змін, або переходу від одного щабля розвитку цивілізації до іншого, була обґрунтована в інноваційній теорії Й.Шумпетера, який зазначав, що розвиток будь-якої соціально-економічної системи задається поняттям “здійснення нових комбінацій”, тобто інновацій. Свою теорію економічного зростання Й. Шумпетер протиставив теорії економічного росту Дж. фон Неймана, який взагалі не враховував технічний прогрес як фактор економічного розвитку. Потім з’явилися теорії розвитку Калецкі, дослідження Шмуклера, які повністю визнали факт значного впливу технічних змін на економічне зростання. Теорію Й. Шумпетера прийняли такі видатні економісти, як Самуельсон, Тінберген, Форрестер, Мандель.

Висновки та перспективи подальших досліджень. Створення Й. Шумпетером теорії якісно нового інноваційного типу розвитку є визначним внеском, що докорінно змінив традиційні уявлення про економічний розвиток та економічне зростання. Ідеї Шумпетера про внутрішню стимулюючу роль інновацій, технічного прогресу послужили свого роду відправною точкою подальшого формування різних теорій трансформації капіталістичної системи, її переходу на більш високий щабель розвитку (індустріальне й постіндустріальне суспільство). Суть інновації полягає у використанні досягнень людського розуму для підвищення ефективності діяльності в будь-якій сфері діяльності людини. Перелік можливих інновацій та сфер їх використання невичерпний — як невичерпні винахідливість людського розуму та різноманітність сфер діяльності людини, багатогранність її інтересів. Інновації — це неодмінний елемент реалізації основних законів розвитку суспільства, умова його динамізму та виживання.

Список літератури:


The evolvement of modern scientific picture of the world

Abstract: The article is dedicated to the evolvement of modern scientific picture of the world, its journey from classical to non-classical form. Various pictures are analyzed from the perspective of modern use as a result of their interaction in the form of new coherence i.e. the system that satisfies the scientific research’s requirements. The benefits of using postnonclassical determination of modern science that is called synergetic, which brings along the confirmation of new world view of world perception, new methodologies of cognition. It also speeds up the disintegration of classical linear model of phenomena, processes, the development of new approaches to the research of modern development processes, the development of alternative, variable decision in search of scientific ideas, hypothesizes etc. This article reveals the synergetic view on the modern picture of the world that opens the new era in research not only of technological tasks, but also of socioeconomic research about the problems of improvement of all areas of social development. These are from management at a level of manufacturing unit (echelon) to the big projects of management of social development not only of one country, but also of all countries of the world.

Keywords: scientific picture of the world, science advancement, scientific cognition, synergy, postnonclassical science.

Problem statement. Constant improvement of the world cognition at a modern stage of science advancement requires the expansion of theoretical model or general scientific picture of the Universe. Meanwhile it also requires the other, scientific practical and theoretical methods of understanding of human role and the process of cognition of the world and processes that occur around the human.
Value of human factor in natural-scientific picture of the world is becoming more and more significant, because this factor’s impact becomes so essential that it can at the root change not only the environment, where the human lives now, but also the other areas of the Universe’s existence (including the space).

**The analysis of the latest research and publications.** Distinguished scientists-philosophers have offered and proved the truth of their views on the science advancement: Thomas Samuel Kuhn, Paul Karl Feyerabend, Stephen Edelson Toulmin, Jean-François Lyotard. Main ideas of postnonclassical science were defined by Nazaretyan A.P. I.Prigogine has become the founder and one of the most distinguished scientists of modern science about the postnonclassical picture of the world.

**The article concept.** To consider the evolvement of modern science picture of the world and to analyze it from a perspective of modern use.

**The exposition of main research material.** Important goal of scientific cognition in the context of its methodological self-consciousness is the picture of the world’s construction that would be exhaustive, convincing, general and authentic, considering all factors that have impact on it.

Scientific picture of the world is the variety of theories in the aggregate that describe the natural world to the human, coherent system of visualizations about the general principles and laws of the Universe.

The picture of the world is a systematic formation, which is why one, even the most genius discovery, cannot represent its change – this is the range, system (series) of interrelated discoveries. This is the special form of theoretic cognition that represents the research subject according to certain stage of its historic advancement by dint of which the specific cognitions are systemized. These cognitions are received from different fields.

According to scientific picture of the world, wide range of cognitions about the nature, Universe, space, interspace Universe etc. is being put together. The structure of scientific picture of the world offers the central theoretic base (core), fundamental research, separate theoretic model that are being constantly changed, transformed, finish constructed etc.
The structure of scientific picture of the world

Central theoretic base (core) has a relative constancy concerning scientific cognition and keeps its existence for a long time (constancy term). This is an aggregate of specific laws, axioms – scientific constants, cognitions and statements that do not require any proof, they are in fact, obvious and are being used in all scientific theories as original. For example, this is a conservation-of-energy principle in physics, the laws of countdown (incon-vertibility) etc. although it is worthy of note that certain modern theorists-fantasts dream about the time machine, which could have travel through time as easy as an automobile does by road. Those are exactly the crazy ideas that gave birth to genius scientific discoveries, for example, Jules Verne’s ideas are implemented in many fields in a varying degree.

Fundamental researches are of specific nature and are constituted as conditionally indisputable. This is a selection of theoretic statements and representations about the ways of interaction and creation of the systems. If there are some abnormities that contradict those representations that are being implemented, there the new proceedings, presumptions, temporary discoveries and models are appearing that can adapt to abnormities without changing the core.

Scientific picture of the world is of paradigm nature, because it is the embodiment of system of world reclamation principles. Its subject matter predetermines the way of seeing the world, because it influences the formation of sociocultural, ethic, moral, logical, methodological standards of scientific research.

Scientific picture of the world is not just a sum or a selection of certain knowledge, it is a result of its interaction in the form of new coherence i.e. the system. This is connected to such characteristic of scientific picture of the world – its consistency.
The destination of scientific picture of the world as a code (summary) of representations and knowledge is proving the synthesis of knowledge. Here lies (appears) its integrative function.

The evolvement of modern scientific picture of the world is a journey from classical to nonclassical and postnonclassical its picture.

The theories and discoveries of Galilei (planetary motion), Newton (gravitation theory) and Euclid (geometry) were the base of classical scientific picture of the world in Europe. Such knowledge and based on the picture of world structure were considered proper until the end of the last century. This structure was corresponding to the icon of progressively directional linear progression with strictly definitive determination. The past determines the present and the present determines the future. All world condition from endlessly far to distant future can be predicted and figured out in advance. Classical picture of the world has described the objects as if they existed in themselves in ephemeral unvarying coordinate system. It holds on tight to orientation on «ontos» (in Greek - genesis, thing that exists) i.e. things that exist in its fragmentariness (structure) and insularity (detachment). Factors that did not fit in general pictures, abnormities, obstacles that did not correspond investigator’s long-held perspective i.e. everything that could harm the object (phenomenon of the process) was mostly neglected. Strictly definitive cause-and-effect relationship was considered as undeniable explaining model.

![Fig. 2. Classical picture of the world (conventional scheme)](image)

Herewith the factors that are marked with «●» come into account beyond dispute in general idea and the ones that are marked with «○» are neglected.
Nonclassical picture of the world that appears to replace the classical one was born affected by the first theories of thermodynamics, when it becomes clear that liquid and gas cannot be represented as purely mechanical systems. There was a proof that accidental processes are not something side and external that can be neglected, but something that is inherent only to this system.

The switch to nonclassical school of thought in science was made in the period of revolution of natural science (the end of the XIX, beginning of XX century), including under the influence of Einstein’s relativity theory. If we graphically represent the nonclassical picture of the world, then it will remind of the sinusoid, which would go round the main line of development (idea).

In such (nonclassical) representation (view) of the picture of the world appears more flexible scheme of determination than in linear process, also the new factor is being taken into account, that can impact on the system (phenomenon, process) – accident factor. The development of the system is directed at corresponding direction, but its condition at any time is not determined, because there is a possibility of interference, the impact of accident factor, which will change the system’s condition even though for a short term. The more of such factors, the more necessary becomes their consideration in the system construction herewith without bearing the main idea off.

For example, if according to classical picture of the world, we would have to describe the process of iron-fall or another celestial body by the main factor – impact
time, then we would neglect such characteristics of influence on the process as obstacles (the slowdown of the body by the atmosphere).

In nonclassical picture, it is necessary to include not only one factor (the slowdown by the atmosphere) in such process, but also the slowdown of iron-fall by all atmosphere slices all together or separately.

The appearance of postnonclassical picture of the world is a treelike graphic art that has a crown with forked branches. The founder and one of the most distinguished scientists of modern science about postnonclassical picture of the world is I.Prigogine. To his hypothesis, from the very beginning of the process or phenomenon at any given time the future stays doubtful and unknown [1]. The development can be of several directions or dimensions that often is determined by any, sometimes even insignificant factor. Small, insignificant energetic impact, so called «prick» (point of bifurcation) is enough for system to readjust and for new level of organization to appear.

![Fig. 4. Postnonclassical picture of the world (conventional scheme)](image)

Thus, the postnonclassical science is a modern stage of science establishment, which has begun in 70s of XX century. Predominate feature (characteristic) of the new stage is interdisciplinarity, the service of utilitarian needs of industry, further implementation of evolutionism principle. Case study of postnonclassical science is synergy that studies the processes of self-organization.
There was a classical science of XVII century and nonclassical science of the end of XIX century, the beginning of the XX century before the postnonclassical science.

Fig. 5. Comparison of scientific pictures of the world

Significant shock for development of postnonclassical science was made by the revolution of accumulation and preservation of knowledge and the possibility of its extensive use in analysis of phenomena, processes etc. i.e. the computerization of science. Also it was by necessity of handling the whole range of scientific tasks, problems with consideration of integrated utilization of knowledge of various academic fields, disciplines considering the human role in the processes and systems that are being investigated.

The mathematization of all academic fields has increased, which led to the possibility of raising the level of abstraction and complexity of representation of the systems that are being analyzed.

Scientific-and-technological advance of development of the computer engineering of 80-90s of XX century has encouraged its fast implementation in the question of investigation, the analysis in all academic fields from microprocesses to mega-phenomena and sociopolitical events. This is because the forecast of development of processes, phenomena and events becomes not only possible at the level of predictions, but also quite valid, reasonable and estimated process of investigation.
More and more complicated and multilevel systems are becoming the object of research that are extremely difficult or almost impossible to carry out an experiment on. Due to that, the most important tool of research activity is a mathematical modelling. Its core lies in the fact that source object is being replaced (represented) by its mathematical model, experimenting with this model is possible by dint of up-to-date computer technologies.

The main concepts (ideas-thoughts-conclusions) were defined by one the most distinguished scientists, spokespersons of postnonclassical science A. P. Nazaretyan in his book «Civilization Crises in the Universal History Context. Complex Study, Psychology and Forecasting» [2]:

1. The reasons of an objective world dependence are determined as multidimensional, extremely complicated and time varying (agile and constantly evolving).

2. Any knowledge is recognized as historically limited and absolute «truth» - the dogmas relinquish the «model-systems» that complement each other, evolve and can be relative concerning their stage of development.

3. The role of subjective relations and purposeful management in the system of world interaction. This tendency is global and in some sort cross functional, as far as the establishment of subjects’ qualities was happening before the life inception, that is why during the expansion of it – its direction to the future, it is logical to expect further universalization of intellectual factor.

4. The cognitive mechanism has become more understandable. Data storage device creatively composes the components and model’s ingredients through this mechanism, this device can form the other models – of higher level of complexity and essence. Such modelling gives the opportunity to think that the process of purposeful management is potentially inexhaustible.

Postnonclassical science studies not only complicated and complex systems, but also supercomplex systems that are capable of self-organization. «Man-sized» complexes are becoming the science object, their inherent component is a human (globally-economic, bio-inspired, biomedical complexes, where human manages). The science’s attention is focused on not only phenomena and processes that are regular and occasionally, regularly repeat, but also on such «deviations» from these phenomena that are unordered, side and accidental, their examination and considering during the research lead to impressive and important conclusions.
Such postulates as complexity, probability, unbalance, variability etc. are being put forward instead of classical science’s postulates: simplicity, stability, balance, determinancy. As a result of studying various complex systems that are capable of self-organization (from physics to economy and sociology), new nonlinear thinking and new «picture of the world» are being formed.

Main characteristics of this picture of the world: 1) unbalance; 2) variability (instability); 3) inconvertibility.

Along with such concepts as fluctuation, bifurcation, cognition, they form, in actual fact, the new base model of the world and its cognition, provide the new language and methodology to the science and, for that matter, create the new science – synergy.

Synergy matter (self-organization theory) is the complicated systems in conditions of variable equilibrium and their self-organization in points of bifurcation and near them, where the small impact becomes significant and unpredictable for its consequences in behavior of system at large.

The main postulate of synergy in postnonclassical picture of the world is the fact that the object is not the thing that exists now, but it is something that emerges in the future.

According to synergy – there are no cross functional laws in the world that would make its cognition possible classically. This means the deontologization (loss of indigenous intuitive interpretations and knowledge), knowledge that has existed before, magnification of the subject’s role in the process of cognition, which can also be interpreted as exception to object’s reality. The questions about the criteria of reality, differentiation and about setting the limits between real and imaginary, fictional are being perplexed.

Synergy makes a radical value reconsideration. It claims for the reconsideration of world ontology (a study about the objective reality, its forms, structure and aspects), the reconsideration of linear progress model, which is a fact right now, and the most important – the criticism of the cumulative model of static model cognition.

Cumulative model of cognition and science advancement and the cumulativism at large considers that the knowledge advancement is following the path of gradual accumulation of knowledge. Such approach makes the qualitative changes absolute and eliminates the possibility of quantity changes and of the
revolution in science. The admirers of cumulativism represent the science advancement as simple, gradual increase of accumulated facts and the increase of generalization level. This view-proceeding has dominated in science and philosophy of their classical advancement period and to a certain extent was slowing down their advancement.

Anti-cumulativism on the contrary presents that there are no constant, continuous constants, components, structures, systems etc. in the process of knowledge development. The switch from one stage of revolution in science to another is connected to the consideration of fundamental ideas and principles.

In general, the science advancement is the change of intimately related theories, the specific research program stands behind them. The change of such programs is the scientific revolution itself.

In history of science, the appearance of periods, where only one idea-program is dominating, is a rarity. There are several alternative scientific directions, ideas, programs, schools, paths and methods of research in any academic discipline. New problem understanding appears exactly in their competition, mutual criticism and change of rise and fall periods.

During the conception of historical dynamic of science by Thomas Kuhn, the science advancement is happening lip-and-stick. He presented the advancement of scientific cognition as the process of paradigm change (main idea, representation within a given science, field of cognition) through the scientific revolutions [3].

It is possible to consider the local scientific revolutions that are happening within separate, certain science – the field of cognition, and the global scientific revolutions that are happening within all bailiwicks and lead to the new seeing of the world. It is possible to separate such global scientific revolutions:

1. The scientific revolution of XVII century that has adumbrated the appearance of classical natural science. All scientific achievements become «embedded» in general Galilei-Newton’s picture of the world.

2. The scientific revolution of XVIII century, beginning of XIX century that has led to the differentiation of general science and has delaminated it to separate disciplinary sciences.

3. The scientific revolution in the end of XIX century, beginning of XX century, where the revolutionary changes in certain knowledge fields were: discovery of relativity theory, cybernetics, genetics, system theory etc. These discoveries have
become a base for scientific and technical revolution and scientific and technical progress of humanity initially during the implementation in the industrial production and practical human life and activities.

4. The scientific revolution in the end of XX century, beginning of XXI century is a discovery in the mega-world, micro-world and the merge of the paradigms of interdisciplinary sciences into the one science.

The other distinguished scientists-philosophers have offered and proved the truth of their opinions about the science advancement. Thus, the philosopher Paul Feyerabend has persisted on his point about the theoretical and methodological pluralism and thought that there is a variety of equal kinds of knowledge and methodologies that promotes the knowledge advancement. The most productive periods of science advancement are the periods of creation and struggle of alternative that «protects» the science from dogmatism and stagnation, promotes the development of various projections, presumptions, scientific ideas, creative approach to scientific research [4].

In his turn, British philosopher Stephen Toulmin puts forward his conception of science advancement, so called «The evolutionary model» of science or «Methodological theory of scientific concepts’ evolution». The characteristics of his conception [5]:

- Fundamental scientific problems might be solved only under the coherent historical context.
- Science is being considered not as a coherent system with inherent organization, but as a population of problems, concepts and explaining procedures.
- Scientific concepts are in the highest flight, the knowledge advancement is considered as a result of synthesis of concepts that are already being created.
- The negation of Kuhn’s scientific revolutions theory and its replacement by the evolution theory.
- This theory is based on Darwin’s evolution theory: the theories that belong to one or several contiguous topical areas are the peculiar populations, members of which participate in the variability and selection processes.
- The variability is considered as an introduction in stable scheme of innovations that improve the explaining potential of description system.
- The selection will be in evidence until the new innovations are accepted and the others are rejected, i.e. (in terms of evolution theory) the assignment of new aspects.

- The scientific process is considered as a constant and undirected process of ideas struggle for survival by applying the best adaptation to the existence environment.

Thus, S. Toulmin has succeeded in the use of historical approach to the science analysis, in seeing certain dialectic aspects of science advancement, which includes the consideration of the evolution of scientific theories due to the change of historical types of rationality. At the same time, he has made the biological analogy absolute, which has led to relativistic view on the science.

Forecited brief analysis of development of scientific picture of the world would be incomplete without such phenomenon in modern science as postmodernism.

Postmodernism is a cumulative definition of modern tendencies that have appeared in the last decades in the cultural identity of developed nations of West and processes that occur there.

Modern state of science, culture and society at large in 70s of XX century was characterized as «condition of postmodernism» (postmodernism).

Jean-François Lyotard, French philosopher, postmodernist, literature theorist, primarily used this definition. He has said that the postmodern was a crisis of meta-narratives (big projects) and opposition of generalization. In his main scientific paper “La condition postmoderne» (1979), he claimed that our century in its postmodern condition is registered for «skepticism to «great» statement» - grand, undeniable such as there were, doctrines, ideas, discoveries etc. [6].

The society, especially the scientists, more and more strives for drawing attention and taking into account the variety of views, religions, faiths, aspirations; the variety of phenomena in nature, society etc.

In XXI century the human feels differently about the time and period, which he lives in, and its impact on the reality that surrounds him. The unity of concepts in science, culture and literature «get fuzzy» due to the enormous number of new («neo-», «new-»), very-large-scale («hyper-», «super-»), oversophisticated («post-») concepts and understandings of at first sight usual phenomena, processes, which humanity used to use as dogmas and axioms for a certain period of time.
The stages of development of science, culture that have antecedent new ideas, have to be analyzed from a perspective of their modern use. These are the call of the time, its impact on the reality that surrounds humanity today.

Conclusions and perspectives of further research. Now the existence of parallels between the postnonclassical science and its indefiniteness, incompleteness, variability and basic methodological framework of postmodernism is obvious. As in postnonclassical science, the categories of uncertainty, nonlinearity, multi-variance, variability are being used in postmodern as well. Postmodern development theory, especially in science and culture, concedes the existence of various views on the Universe, religion, so called «human factor» in research, phenomena, processes etc.

Synergy concedes the same regulations-principles [7]. That is why the use of postnonclassical dimension of modern science is often called synergetic or such that brings along the confirmation of new world view of world perception, new methodologies of cognition. It also speeds up the disintegration of classical linear model of phenomena, processes, the development of new approaches to the research of modern development processes, the development of alternative, variable decision in search of scientific ideas, hypothesizes etc., something that might be called the choice.

This, in and of itself synergetic, view on the modern picture of the world that opens the new era in research not only of technological tasks, but also socioeconomic research about the problems of improvement of all social development fields. These are from management at a level of manufacturing unit (echelon) to the big projects of management of social development not only of one country, but also of all countries of the world.

During the research of all systems, it is prohibited to neglect any, even at first sight insignificant factors and systems’ components.

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Classification of risks in industrial enterprises and their effective management mechanism

Abstract: Risk factors affecting production and economic activity of innovative development of industrial enterprises have been presented in the article. For this reason the structure of indicators included into the classification has been defined and new methodological bases of effective management has been worked out.

Risks in industrial machinery enterprises were assessed and strategical directions of the development were presented in conclusion.

Keywords: economic, production, industry, risk, investment, innovation, competition.

Introduction: Experts engaged in the assessment of innovative, that’s competitive developments of refining industry enterprises and their effective management group the factors forming risks occurred in the zone as following (table 1):

The first group is called economic factors. They include the followings:
- shortage of financial means;
- insufficient governmental financial support;
- low payable demand to the new products of the enterprise;
- high value economic risk and long term payment of expenses on new products.

The second group is called production factors. These factors include:
- low innovation potential of the enterprise;
- lack of specialists in the enterprise;
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- low innovation potential of the enterprise;
- lack of specialists in the enterprise;
- shortage of information about new technologies in the enterprise;
- not accepting of innovations by the enterprises;
- shortage of information on sale markets;
- lack of cooperation opportunities with other enterprises and scientific organizations;
- indefiniteness of innovation process time;
- uncertainty of the market of technologies (mediation, information, law, bank and other services;)

The third group consists of other factors. It includes the factors:
- lack of the necessity to new products as a result of previous innovations;
- lack of legislation regulating and encouraging innovation activity and normative-juridical documents;
- indefiniteness of innovation process time;
- uncertainty of the market of technologies (mediation, information, law, bank and other services;)

Table 1.
Risky factors group preventing innovation activity of industrial enterprises

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>The quantity of enterprises estimating factors preventing innovations.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>main and decisive</td>
</tr>
<tr>
<td>Insufficiency of financial means</td>
<td>22</td>
</tr>
<tr>
<td>Insufficiency governmental financial support</td>
<td>9</td>
</tr>
<tr>
<td>Low payable demand for the new products</td>
<td>3</td>
</tr>
<tr>
<td>High value of the innovations</td>
<td>13</td>
</tr>
<tr>
<td>High economic risk</td>
<td>9</td>
</tr>
<tr>
<td>Long period for payment expenses spent on new products</td>
<td>7</td>
</tr>
</tbody>
</table>
### Production factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low innovation potential of the enterprise</td>
<td>5 8 15 43 35 25 21 23 10</td>
</tr>
<tr>
<td>Shortage of specialists</td>
<td>2 3 2 26 23 19 21 19 18</td>
</tr>
<tr>
<td>Shortage of information on new technologies</td>
<td>3 5 10 27 22 14 15 17 14</td>
</tr>
<tr>
<td>Not accepting of innovations by the enterprises</td>
<td>5 3 3 13 12 10 18 20 17</td>
</tr>
<tr>
<td>Shortage of information on sale markets</td>
<td>3 2 4 14 15 14 17 19 12</td>
</tr>
<tr>
<td>Lack of cooperation opportunities with other enterprises and scientific organizations</td>
<td>3 9 11 7 23 27 20</td>
</tr>
</tbody>
</table>

### Other factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of demand on new products as a result of previous innovations</td>
<td>2 2 2 16 26 9 14 20 16</td>
</tr>
<tr>
<td>Lack of legislation and documents regulating-juredical encouraging innovation activity</td>
<td>1 2 3 30 21 22 17 17 17</td>
</tr>
<tr>
<td>Uncertainty of the innovation process time</td>
<td>2 2 2 12 12 9 15 18 16</td>
</tr>
<tr>
<td>Undevelopment of innovation infrastructure (mediation, information, juridical, bank a not other)</td>
<td>2 4 2 27 23 20 17 18 10</td>
</tr>
</tbody>
</table>
Assessment of the risks

It should be mentioned knowledge indices (knowledge coefficient $K_c$) of the experts investigating the reasons of the risks taking place in the area have been estimated according to the information and consideration obtained from statistic and other sources (local and foreign) by the following equation:

$$K_c = S(K_m + K_a)$$

Here, $K_m$ is coefficient of awareness (reliability), $K_a$ is-argumentation (justification) coefficient, $S$-is the number of experts with general opinion considering knowledge: Assessment of awareness and argumentation has been carried out on ten-point scale.

Expert’s knowledge is determined by the processing of objective and subjective indices. During the expert assessment while processing the information experts general thoughts and their coinciding degree on each question must be determined. That’s collective experts assessment is carried out considering individual experts’ knowledge. In this case general assessment has been carried out by the following equation:

$$S_{jk} = \frac{1}{n} \sum_i C_j K_i$$

Here $S_{jk}$ is number of the experts with common opinion whose knowledge is considered; $K_i$ is the knowledge coefficient of the experts; $C_j$ - is the number of the experts. While assessment experts’ opinions are various. That’s why coinciding degree of their answers (opinions) should be taken into account. Degree of opinions coinciding has been determined with the help of variation coefficient ($V_j$) of the obtained values:

$$V_j = \frac{\sigma_j}{S_j}$$

Here, $\sigma_j$ is the square espectoration from awerage value, $S_j$ is espectoration from the values of definite factor to the awerage value.

It should be mentioned lower is $V_j$, higher is the coinciding degree of experts’ opinions on the relative importance of the factor. Let’s assess risk factors formed in non-oil industry enterprises according to the offered methodics.

<table>
<thead>
<tr>
<th>services)</th>
<th>6</th>
<th>3</th>
<th>4</th>
<th>29</th>
<th>29</th>
<th>27</th>
<th>15</th>
<th>21</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undevelopment of</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>technologies market</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
These factors are classified as main or crucial factors; significant and low significant factors.

**Sharing of the risks on the ranges**

According to the assessment carried out in 118 enterprises by the experts in the main crucial factors special weight of the economic factors is 62%, special weight of the production factors is 29%, special weight of the other factors is 9%. Let’s carry out this assessment on significant factors. The assessment carried out by the experts on 329 enterprises gives the following results: special weight of economic factors is 45%, special weight of production factors is 28% and special weight of other factors is 27%.

If to carry out this assessment on low significant 251 enterprises experts can conclude that impact of economic factors is 34%, impact of production factories 36% and impact of other factors is 30%.

In a whole while assessment of risk factors formed in refining industry enterprises of the country (in 698 enterprises) generalized knowledge (opinion) indices on economic factors were 0.43, on production factors they were 0.32 and on other factors they were 0.25.

It means experts have given values characterizing high level of coinciding degree of the opinions on the significance of risk factors [1,2]. According to experts’ opinions the following risk factors significantly influencing activity of the enterprise have been shown (table 2).

The offered methodics realizes more precise assessment of the risks formed in the enterprise. Various experts’ opinions and practices, the coinciding degree of their point of views have been considered in this methodics. Besides this methodics presents more precise results. In this case subjective degree of the generalized expert assessment as a results of inquired experts’ knowledge, awareness and argumentation decreases.

All these make necessary to work out prognosis model of efficient management of risk factors group according to the rank levels.

For this purpose let’s research factors group separately.
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### Table 2

**Risk factors group influencing compeitible development of the industry enterprises**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Number of experts</th>
<th>Main or crucial</th>
<th>Significant</th>
<th>Low significant</th>
<th>Common</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>weight coefficient</td>
<td>rank degree</td>
<td>weight coefficient</td>
<td>rank degree</td>
</tr>
<tr>
<td>Economic</td>
<td>118</td>
<td>0,62</td>
<td>1</td>
<td>0,45</td>
<td>1</td>
</tr>
<tr>
<td>Production</td>
<td>329</td>
<td>0,29</td>
<td>2</td>
<td>0,28</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>251</td>
<td>0,09</td>
<td>3</td>
<td>0,27</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>698</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Azerbaijan industry. It has been compiled on the materials of DSK Baku, 2015.

### Estimation of financial risks

The factor included into economic factors group and indicating shortage of financial means of the enterprise and governmental financial support makes important the use of local and foreign investment. But before making the investment, the investors have to determine maximum damage volume according to the risk, to compare it with the capital volume and financial resources, and also to define if capital loss will result with bankruptcy.

Damage volume on capital investment can be equal to the capital volume, or it may be less or more. For example, the investor invested 100 th.manat on the risky work and as a result of failure he lost this money. But considering the inflation its real losses can be less than the capital. In this case damage volume is determined by the inflation indicator. But “brufcase” investments, the volume of the damage got during the securities buying can be less the spent capital volume. Correlation of maximum possible damage volume to the investor’s financial resources volume expresses risk level bringing to bankruptcy. It is measured by risk coefficient.

$$K_p = \frac{V}{c}$$

Here $K_p$ is risk coefficient, $V$ is maximum possible risk amount, manat, $C$ is financial resources volume, manat considering precise receits of the means.

It must be mentioned that researches carried out on risks assessment and management by local and foreign scientists make possible to come to such conclusion. First of all optimal risk happens when it is equal to 0.3, risk coefficient
cousening bankruptcy of the investor is 0.7 and if it is more. The second, the investor must know maximum amount of the damage and its results also can make decision to refuse the risk, to take responsibility on it on pass it to another man. The third the investor must determine the favourable correlation between insurance present and insurance amount during the pass of the risk to another person. Thus insurance present or insurance payment is the amount payed by the guaranteed person for the insurance risk to the man madeinsurance.

Insurance amount is the guaranteed amount of material values of the insured man (life, health and etc.). In this case if the amount of the damage depending on insurance condition in more than amount of insurance payment, the investor mustn’t accept the risk.

The essence of the insurance is that the investor can refuse one part of the profit in order to avoid the risk partially or completely. Insurance of the risk is one of the methods widely spread and used to make low the risk level. For insurance use of money fund formed and agreed beforehand is characteristic. Division of insurance fund away the participants takes place [3,4].

Risk probability of the activity of the insurer is determined with the following indices.

1. Happening of insurance accidents (number of insurance accidents for one insurance object);
2. Coefficient of risk cumulation (correlation of damaged objects numbers to the insurance accidents number);
3. Necessity of insurance sum (correlation of paid insurance sum to the sum of insurance objects);
4. Heweness of the damage indicates destruction of some part of the sum.

It is determined by the following equation:

$$Y = \frac{B \times n}{C \times m}$$

Here B is the cost of paid insurance sum, manat; n is number of objects; C is insurance sum; m is number of damaged objects as a result of insurance accident.

The advantage of the profits on the expenses is expresses by financial stability coefficient:

$$K_d = \frac{(G + X)}{P}$$
Here $K_d$ is stability coefficient of insurance fund; G is the profit sum of insurer, manat, during the tariff period; X is expenses sum of the insurer, during the tariff period, manat; P is the sum of reserve funds means, manat.

**Conclusion**

Besides the guarantee for rise level reduce, it is expedient to use the following methods in ownership activity practice.

- Limiting financial expense (limiting means to determine sums of expenses, sales, credits and etc., it is one of the important means reducing risk level, it is also used making overdraft agreements in banks, when giving loans, while selling of goods with road checks and euro checks credit, while determining of capital investment);

- Diversification of capital investment and widening of various activity types (diversification - is the division process of invested means between the objects which have no relations);

- Forming of effective system for economic and juridical management of risks;

- Informational-analytic providing of decision on risks management working out of preventive measures for reducing influences of negative tendencies, widening of application opportunities of positive;

- Keeping of the risk in appropriate level out the activity.

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**Investment projects on the basis of public-private partnership in Russia**

**Abstract:** The article analyzes the legal framework for the PPP implementation in Russia for the investment projects, compares its main organizational and legal forms and models. The main drawbacks of the problem and the circumstances complicating the wider implementation of public-private partnership in the development of the country's economy are studied in detail, particular attention is paid to potential risks for public and private partners. Recommendations and proposals for successful development of public-private partnership in Russia are given.

**Keywords:** public-private partnership, mechanism, models, private investor, public investor.

There are various definitions of public-private partnership (PPP) for the implementation of investment projects.

The most complete definition of PPP can be found in the World Bank's materials, which considers public-private partnership as contractual relations between public and private partners. The agreement can be concluded for the production of any products or services. In this case, two tasks are solved: attraction of additional financial sources for the projects implementation and enhancement of budget financing efficiency.

In Russia public-private partnership and municipal-private partnership (MPP) are defined as a form of interaction between public and private partners, based on a...
contract or agreement for a particular period of time. Such interaction provides an opportunity to attract additional private investments into the economy, increasing the availability and quality of public services for the population.

Public-private partnership is actively developing in Russia in the implementation of federal, regional and municipal investment projects, contributing to the attraction of private businesses to the development of public transport, social and communal infrastructure.

The mechanism of PPP projects operation is being studied actively in Russia and foreign countries. Among the authors whose works reflect the various aspects of this problem are A.A. Apatov, V.G.Varnavsky, V.N. Ivanov, N.A. Ignatyuk, V.A. Kabanashkin, V.V. Maksimov and others. Among the foreign researchers we should distinguish the works of A. Atkinson, E. R. Yescombe, V.V. Knaus, F. Marin, G. Tullock, and others.

In Russia legal framework of PPP implementation was formed considering its own and international practical and theoretical experience. Nowadays, the following federal acts are the legal basis for PPP in Russia:

— Federal Act №115 – Federal Concession Agreement Act of July 21, 2005;

The main current federal act No. 224-Federal Public-Private Partnership Act took effect from January 1, 2016 [1]. Its main features are:

— the opportunity for the investor to obtain ownership of the object of the PPP agreement. This rule mainly distinguishes the PPP law from the concessions law;
— enables market participants to choose the most profitable form of PPP project implementation, causing an increase in investment projects implemented in the market;
— the PPP law guarantees and determines the property rights of the private partner for the construction or reconstruction object in accordance with the PPP agreement, makes it possible to use this project as collateral for loan-based financing;
— the law provides for the mandatory formation of authorised bodies of the Russian Federation, territorial entities of the Russian Federation and municipal
structures for the coordination of competitive documents with public partners, coordination of actions and evaluation of the PPP projects efficiency;

— the law defines a list of infrastructure objects on which the agreements on public-private partnership may be concluded. It includes actually all industries, including social, communal and transport infrastructures, power industry, land reclamation and others;

— the law provides for the possibility of PPP projects co-financing from budget sources.

In addition to Federal Law No. 224-FZ of July 13, 2015, the Ministry of Economic Development of the Russian Federation has developed laws and regulations, which establish various requirements. They belong to the development of public-private projects and the procedure of their consideration, the methodology and procedure for evaluating the projects effectiveness, the procedure for contests holding, monitoring the projects implementation, negotiations at various stages of projects.

Federal Law No. 224-Federal Public-Private Partnership Act sets more strict requirements for the members of private partnership in comparison with the Federal Concession Agreement Act. Under the new law, only legal entities of the Russian Federation can act as private partners. Foreign organizations have the opportunity to participate in PPP and MPP only indirectly, as part of a consortium with Russian organizations or as part of Russian legal organizations that they create.

PPP is an alternative to state entrepreneurship, as well as the full transfer to the private sector of certain economic activities through the privatization of assets.

The main directions of PPP implementation are:

— development of transport and production infrastructure;

— renovation and reorganization of housing and communal services;

— implementation of various social projects in education and the social field;

— organization of consulting services for small and medium-sized businesses, etc.

Public-private partnership reduces the burden on the budget, enables the use of technical knowledge and experience in industrial management, modern technologies, knowledge and skills which a private sector can have. The PPP defines the state guarantees during the project implementation, enables the use of various
forms of financing, the possibility of flexibility in the distribution of various risks and functions of the public and private partners.

The main organizational and legal forms of PPP projects implementation include: concession agreement, life cycle contract, production sharing agreement, etc.

According to the "concession" model, the state invests private business with full powers to perform in fixed terms the functions stipulated by the agreement. Herewith the private partner gains the rights necessary for the functioning of the contractual object. The state remains the owner of the property. A private partner on a contractual basis pays a fee for the use of public property.

It is quite clear that the interest of the private sector in such projects can be only in the case when, with acceptable risks, it can get the necessary return on investment. Such agreements, as a rule, have a long term - from 10 to 30 years.

The drawbacks of this model include the financial support of the project, banning of collateral of the project object, regulation of direct relations with creditors.

When implementing investment projects, the organizational and legal form "Life Cycle Contract" is increasingly used. This PPP model is a type of concession. Its peculiarity is that the public partner concludes an agreement with a private partner for the design, construction and operation of the object for its entire life cycle. The private partner attracts financial resources on the basis of project financing with the help of a special project company. A state partner is not an investor, but pays for work, goods and services after the object is put into operation.

The production sharing agreement is often used in the practice of PPP, but mainly in mining, searching and exploration of mineral raw materials, as well as performing work related to this type of activity. This form of public-private cooperation in Russia is defined by the federal law of December 30, 1995, No. 225-FZ "On agreements, on the division of production". Under this agreement, the state grants the investor on a paid-for contractual basis the exclusive rights to searching, exploring and extracting mineral raw materials in a certain site, for a certain period and conducting related work. An investor or a consortium of investors are obliged to perform all works at its own expense and at its own risks.

At the end of 2016 in Russia, about 900 projects were implemented on the basis of PPPs. The total volume of private investments was more than 640 billion
rubles. The municipal level of this amount is 86.7%, the regional level - 11.9%. The share of private investment at the federal level is only 1.4% [2].

The total number of PPP projects in Russia for 2014-2015 compared to 2013 increased almost tenfold. First of all it is due to the development of PPP legislation and particular attention of public partners to the use of this mechanism in the development and modernization of infrastructure.

Examples of PPP applications in Russia include the following projects:

— St. Petersburg. The Western High Speed Diameter (WHSD) is the first toll highway in Russia, the world's largest example of PPP in road construction. The total length of the WHSD is 46.6 km, it enables to travel from the south to the north of St. Petersburg bypassing the downtown.

— The Moscow region. Bypassing the city of Odintsovo is one of the first federal projects implemented within the concession. The length of the bypass is 18,535 km.

— The Voronezh region. Bypass Novaya Usman, highway M-4 «Don». On this highway the bypass will be the first one built on the basis of PPP. The length of the road is 20 km. The term of the investment agreement is 23 years. The cost of construction is 17.3 billion rubles.

— The highway «Moscow-Saint-Petersburg M-11» is a new toll highway with a length of 669 km. The construction goes in several stages, with each stage being an independent investment project.

The most promising areas of PPP implementation in the investment projects in Russia include:

— PPP projects in the field of housing and communal services. However, not all projects of this direction reach the financial closure due to insufficient elaboration, as well as unbalanced risks of participants.

— PPP projects in the recycling of solid domestic waste, which are low-cost and with a high level of payback.

— Projects in the field of power industry.

— One of the promising areas of PPP implementation is the construction of highways, especially for regions with a low level of infrastructure and budget and revenue difficulties.

— A high level of payback has the application of information technologies in the transport system.
— Good perspectives of PPP application in the field of health.
The development of PPP in Russia finds a number of difficulties and circumstances which include:
— the economic situation in the country creates certain difficulties for attracting investments;
— cooperation problems of the state and business;
— difficulties in obtaining of credits at Russian banks, their high cost, high interest rates;
— there are still problems of laws and regulations for PPP implementation;
— the deficiency of qualified specialists in the field of PPP.
For participants of PPP projects, investors and public partners, potential risks are of significant importance. The distribution of commercial risks in contracting and PPP agreements is a key issue that determines the commercial content of a project.
Among the potential risks of PPP we can identify the following groups:
1. Risks of a political nature. For example, cancellation at the stage of competitive procedures.
2. Financial risks - default on obligations by the party to the agreement.
3. Legislative risks - changes of legal system.
Potential risks of investment projects using PPP also include:
— risks associated with the effectiveness of public administration and the level of coordination;
— complicated licensing procedures;
— the main risk is the possibility of non repayment of investment, which depends on the profitability of the project and high interest rates;
— the regulatory framework for PPP projects implementing has not been fully developed;
— lack of laws and regulations that regulate control and monitoring of objects;
— difficulties with defining the guarantees in the PPP agreement;
— and others.
Based on the research carried out on the implementation of innovative projects in Russia using PPPs, the following conclusions and recommendations can be made:
Nowadays public-private partnership is an important factor in the development of the country’s infrastructure. The use of PPPs gives an opportunity to create new
centers of economic growth, contributes to the implementation of social policy in Russia. The partnership of the state and business is a good basis for economic recovery with mutual consideration of interests [3].

In Russia for successful development of public-private partnership it is necessary:

1. Improvement of legislative regulation and federal law on PPP. Expansion of the list of objects for which PPP agreements are possible. Supporting the reliable operating of laws and regulations.

2. Develop a strategy for the PPPs implementation in various industries.

3. In the tax legislation to create provisions, which would regulate the taxation procedures, carried out in the framework of PPP projects.

4. Legislate the return on investment in projects using PPPs, providing long-term government guarantees.

5. Organize specialized departments for the coordination and development of PPPs in the regions.

6. Increase the availability of financing in the implementation of PPP projects.

7. Create an opportunity for subsidies for the implementation of PPP projects for regional budgets.

8. To expand the opportunity of participating in PPP projects as a private partner of companies with the state's share exceeding 50%.


10. A deep study and use of foreign experience [4,5,6].

Solving these and other issues will significantly expand the scope and area of public-private partnerships when implementing investment projects.

References:


**New trends in the development of parliamentary diplomacy**  
*(party-institutional aspect)*

**Abstract:** Parliamentary diplomacy became an important part of the enlarged international dialogue, primarily as a platform for using new information, communication and humanitarian methods.

Nowadays, when international dialogue is increasingly flowing in hostile environment, the discrepancies between political forces of Europe on the basis of ideology is becoming more crucial. In this regard, life itself requires from the parties to clarify their positions on any issue concerning the citizens of each country and not to complicate the interaction between different political forces. The threat lies in the fact that the current culture of diplomatic contacts is often replaced by PR-technologies and PR-actions, there occurs some corrosion of diplomatic and parliamentary institutions, which could lose their impact.

**Keywords:** parliamentary diplomacy, representation, international organization, integration, political party.

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**Новые тенденции в развитии парламентской дипломатии**  
*(партийно-институциональный аспект)*

**Аннотация:** Парламентская дипломатия стала важной частью расширенного международного диалога, прежде всего как платформа для использо-
vания новых информационных, коммуникационных и гуманитарных методов. В настоящее время, когда международный диалог все более течет во враждебной среде, расхождения между политическими силами Европы на основе идеологии становятся все более важными. В этой связи сама жизнь требует от сторон разъяснить свои позиции в вопросах, касающихся как граждан каждой страны, так и сообщества в целом, не усложняя взаимодействие между различными политическими силами. Угроза заключается в том, что нынешняя культура дипломатических контактов часто заменяется PR-технологиями, происходит некоторая коррозия дипломатических и парламентских институтов, которые могут потерять свое влияние.

**Key words:** parliamentary diplomacy, representation, international organization, integration, political party.

Наличие общемировых проблем и поиск путей их решения в целом определяют лицо и структуру международных отношений нового века. Сложившаяся в мире ситуация требует эффективного управления международными процессами, дальнейшего совершенствования механизмов сосуществования государств, оптимизации работы как международных организаций так других участников международных отношений.

Важной составляющей расширенного международного диалога выступает и парламентская дипломатия. Как новый метод коллективной дипломатии роль многосторонней парламентской деятельности на международном уровне, в том числе в международных парламентских учреждениях активно совершенствуется и всё больше возрастает.

Основательная институционализация парламентской дипломатии в Европе ведёт начало с образования в рамках таких международных организаций как Совет Европы, Западноевропейский союз парламентских ассамблеи, а также с возникновения Северного Совета как межпарламентской организации на севере Европы (кон.40-х-нач.50-х.гг.).

Следует отметить, что значение международного диалога народных избранников было осознано значительно раньше, в частности, еще в 1889 г. (задолго до создания Лиги наций и ООН) был основан Межпарламентский со-
юз [1]. Но именно после Второй мировой войны в Европе возникла растущая потребность в расширенном международном диалоге, благодаря которому народы и их правительства должны были изъять уроки из этой большой катастрофы. Анализируя историческую ретроспективу и до сегодняшнего дня, можно увидеть, что даже в самые конфронтационные периоды межпарламентские коммуникации продолжали развиваться, шел и до сих пор продолжается поиск новых форм и методов таких контактов.

За более чем половину столетия в Европе к числу возникших постепенно присоединились новые международные парламентские учреждения, в частности: Парламентская ассамблея ОБСЕ, Парламентское измерение Центральноевропейской Инициативы, Балтийская ассамблея, Парламентская ассамблея ОЧЭС, Межпарламентская ассамблея СНГ, Парламентская ассамблея ГУАМ, Парламентская ассамблея Евронест и другие; особое место занимает Европейский парламент (Европарламент) [2].

По сути, в международных парламентских институтах отражается «срез» национальных обществ, задействовано значительное количество парламентариев из разных стран, которые отстаивают там, в зависимости от обстоятельств, влияния и возможности с одной стороны - интересы своей политической партии, а с другой - защищая национальные интересы своих государств и формулируя общеевропейские стратегические задачи и цели.

Примечательно, что в силу более развитой формы правовой интеграции, решения Парламентской ассамблеи Совета Европы (ПАСЕ), в которую входит 47 парламентских делегаций государств-членов Совета Европы имеют большее влияние и высшую способность к воплощению в качестве правового механизма, чем других международных парламентских учреждений. Также следует отметить, что резолюции и другие документы, принятые международными парламентскими учреждениями не могут прямо изменять национальное законодательство государств-членов международных организаций, но в ряде случаев они могут влиять на процесс формирования норм международного права, после согласия государств на такую инициативу, они обладают соответствующей силой средств международно-политического влияния, имеют нравственный авто-

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1 Международная парламентская организация, объединяющая представителей парламентов более чем 120 государств мира.
2 Юридической и общеполитической легитимности Европарламента добавляет то, что состав Европарламента избирается прямыми выборами. Таким образом, депутаты независимы от парламентов своих государств и представляют непосредственно избирателей.
ритет, способствуя тем самым принятию международными организациями правовых решений. Так, ПАСЕ стала инициатором многочисленных европейских конвенций (Конвенция о защите прав человека и основных свобод с 1950 г. [2], начавшая механизм защиты прав человека; Европейская социальная хартия [3] и др., которые сейчас являются базой законодательства в различных сферах общественной жизни Европы и не только ее.

Таким образом, такие рекомендательные нормы, дополненные средствами международного парламентского контроля (мониторинговые процедуры, координационные механизмы) вносят свой вклад в международно-правовое регулирование. И, как отмечает Ян Броунли, "даже простое формулирование принципов способно освещать и развивать обычное право " [4, с. 437].

В то же время, наряду с активным применением традиционных институтов дипломатии (международные документы, мирные средства разрешения споров, международные учреждения и конференции, основные принципы международного права) парламентская дипломатия характеризуется достаточной гибкостью и авторитетом применяемой аргументации, ориентацией на наиболее актуальные повестки современности, широкой географией связей, международно-правовой инициативностью, удобным вариантом если не решения, то четкого обозначения проблем. Это выступает особо важным в условиях мирового кризиса, наличия и действия кризисных проявлений в сфере экономики, финансов, экологии и других областей, а также в ходе поиска ответа на острые и сложные вызовы (риски) международной и региональной безопасности. Такой формат отношений позволяет согласовывать политические позиции, даже порой диаметрально противоположные, находить приемлемые решения, компромиссы, что бесспорно является актуальным в период усложнения самой системы международных отношений.

В процессе функционирования парламентской дипломатии стоит отметить особую роль сложившихся в рамках европейских парламентских институтов политических групп (фракций), которые состоят как правило, из национальных партий идентичной политической направленности, а в целом являются выражителями различных политических интересов. Существование и роль политических партий на европейском уровне впервые были признаны «Маастрихтским договором» (1992 г., ст. 191) [5]. Поправками Ниццкого договора (вступление в силу 01.02.2003 г.) было дополнено правилом, уполномочившим Евро-
парламент и Совет в законодательном порядке определить правовое положение данных партий [6]. Помимо иного, ст. 191 Договора указывает, что политические партии на европейском уровне важны как фактор интеграции в рамках Союза [5].

Даже в государствах с развитой демократией, внутренние политические силы, нуждаются в собственном политическом представительстве на международном уровне с соответствующими политическими правами. И в условиях конкуренции различных социально-политических сил образуется площадка для развития расширенного международного диалога. В связи с этим, политические партии с общим идеологическим позиционированием не только пытаются укреплять свое внутреннее положение через международные парламентские институты, но и ищут пути взаимного формирования международной политики, используя также нормы международного права.


Но в последнее время, внедрённая практика политической конкуренции подтверждает, что новые политические силы всё отчётлиwie являются источником и действующей силой общественного диалога, в том числе и на общеевропейском уровне.

Неспособность «старых» политических сил разрешить кризис на европейском континенте показывает ошибки послевоенной Европы, которые способствовали росту популизма и всё яснее видны глубинные дефекты существующей системы. В условиях быстро меняющегося современного мира со всеми его потенциальными возможностями и «угрозами», государства перестали быть единственным участником процесса принятия важных решений и оказываются тесно связанными с другими субъектами международных отношений с различным потенциалом, ареалом влияния и векторами развития. Мировой финансовый кризис, формирование «новых» центров силы, вызовы междуна-
родной системе вносят коррективы во внешнеполитические стратегии. При этом также корни очень многих негативных процессов лежат в неравенстве доступа государств к различным благам цивилизации, в неравных материально-социальных условиях.

В данном контексте международный диалог все чаще протекает в агрессивной среде, а расхождение между политическими силами Европы на идеологической основе становится все более решающим. В эпоху глобализации, которая стирает старые критерии, возникает новая норма, в которой исчезают давние убеждения и четкие разделения на правых и левых. В Европе происходит трансформация с ярко выраженным политическим характером. Избиратели хотят эффективного решения накопившихся проблем, теми способами, что не вписывается в старые, неэффективные образцы.

Большинство оппозиционных европейских партий, в частности с идеологией ультраправых, помимо прочего, выступают за ослабление зависимости их конкретной страны от Евросоюза, борьбу с миграцией и противостояние исламизации региона. Предлагая радикальные формы решения этих проблем, такие партии оказываются в оппозиции к правящим ведущим европейским партиям. При этом первые получают поддержку тех граждан, многие из которых не хотят голосовать за «радикалов», но, тем не менее, не видя решения злободневных вопросов от правящих сил, стремятся таким способом к решению накопившихся проблем, что при нынешнем истеблишменте не удается реализовать в государствах Европы.

В свою очередь, путем активизации деятельности и расширения международных связей с политическими группами международных парламентских институтов происходит привлечение новых политических партий к общеевропейскому политическому пространству. Выборы в Европарламент (2014 г.) в Великобритании показали преимущество Партии независимости Соединенного Королевства - United Kingdom Independence Party (UKIP). Если на предыдущих выборах UKIP заняла второе место, то в 2014 году смогла набрать почти 1/3 голосов избирателей. Можно выделить три основных политических направления, которые позволили UKIP победить: выход страны из Евросоюза; усиление миграционного законодательства; поддержка малого и среднего бизнеса (что и показал «брекзит»). Значительное представительство евроскептиков характерно также для таких стран как: Венгрия, Австрия, Франция, Дания, Италия, Голлан-
дия и др. Их представители выдвинут идеи к объединению европейских националистов (например, председатель «Национального Фронта» Франции Марин Ле Пен). Эти предложения адресуются к партиям подобного идеологического направления, таким как: итальянская «Lega Nord», нидерландская «Vlaams Belang» (Фламандский интерес) в Бельгии, которые в будущем, накануне предстоящих выборов в Европарламент, планируют объединить энергию, развить сотрудничество и получить еще большую поддержку в Европе, что может оказать значительное влияние и на международный правопорядок в Европе.

Действительно, как заявляет французское издание «The Guardian», каждая страна имеет свою специфическую политическую культуру и контекст. Но возникают ниже проведённые параллели, что левые из партии "Podemos" и правые из партии "Ciudadanos" в Испании бросают вызов укоренившимся социалистам и основным правым, а в Греции подъём оппозиционной партии "Сириза" способствовал уходу социал-дем. партии "Pasok" после десятилетий чередования власти с правыми. В Нидерландах зеленые и центристская партия "D66" добились больших успехов в этом году [7].

В таких политических силах видится источник и действующая сила решения многих вопросов, что приводит к конкуренции тенденций, с одной стороны - расширению представительства радикал - националистов и евроскептиков, а с другой - появления совершенно новых политических сил с новой конфигурацией и энергетикой ("La République En Marche" (Франция)).

Бесспорно, огромное значение приобретают субъективные факторы, в виде отдельных ярких политических персон и альтернативных концептов развития. Такие новые тенденции выступают своеобразными инновационными подходами, способствовавшими подъёму Трампа в США и, в некоторой степени, "брексита" в Великобритании.

В данном контексте политической трансформации особое значение приобретает дееспособный качественный состав международных парламентских учреждений, взаимодействие политических фракций на общеевропейском международном уровне. Ибо доминирующее место в международных отношениях будет занимать антикризисная тематика, имеющая долгосрочный характер действия. Она распространяется на все формы сотрудничества без исключения - двусторонние, многосторонние и применение парламентского ресурса при реализации мер антикризисного реагирования видится эффективным в постро-
ении радикально новой логики, выработке новых общих правил сосуществования народов с целью преодоления несовершенств существующей системы международного взаимодействия и построения новой.

Учитывая сказанное выше, институционализация международной системы парламентской дипломатии, как и роль политических сил должны быть ориентированы на приоритеты качественного повышения эффективности международного права, дееспособности государств в удержании их суверенитета, способствуя международному правопорядку в целом, поддержанию равновесия в международной системе, конструктивного сотрудничества международного сообщества. В процессе институционализации, задача партий - реализовать данные приоритеты такими средствами, которые могут включать в себя создание устойчивой системы мониторинга эффективности как парламентских учреждений, так и других структур. Но из-за изменения внешних международно-политических условий, существует потребность в необходимости постоянного процесса координации деятельности различных европейских международных парламентских институтов, сферы интересов которых могут совпадать или пересекаться. Главная их задача состоит в том, чтобы они не дублировали друг друга и не конкурировали, а взаимно дополняли. Ибо европейская парламентская дипломатия с учётом политической трансформации как платформа применения новых информационно-коммуникативных, гуманитарных методов могут и должны сыграть важную роль в содействии к решению как глобальных проблем, так и внутренних угроз для Европы, что в условиях взаимозависимого мира могут иметь непредвиденные и неожиданные последствия.

Список литературы:


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On improvement of innovative activity of the oil and gas industry of Azerbaijan

Abstract: This article examines the theoretical basis of innovation, studied the peculiarities of formation of innovation development in the Republic of Azerbaijan. In addition we analyze the innovation activity in the oil and gas industry of the Republic, and summarizes the features of the innovative activities of the industry. In the end, developed a number of conclusions and proposals for improvement of innovative activity, as studied in the industry and the whole economy. In the article above information about the formation and development of innovation progress in Azerbaijan Republic is given. Furthermore, the potential of oil industry’s innovation is analyzed.

Keyword: innovation potential, productive innovation, efficiency of methods of influence on the formation bottom-hole zone wells, flow capacity.

Oil production using innovative technologies has always been the main acting line of the oil industry companies. The companies successfully solve the strategic objective of enhancing net volume of their own oil in the general volume of oil on the market by implementing new progressive technologies thus providing higher yearly growth rate of production from their own deposits.

Implementing of innovations remains the main element in the activity and development concept of modern oil companies. The characteristics of the purchased and operated deposits (low productivity, complicated geological structure, hardly-extractable reserves) determine implement of modern technologies. New kinds of reagents and hi-tech equipment designed and produced by the companies and their subsidiaries allow implement of effective complicated-fields-development, rational oil recovery. Today domestic and attracted innovative technologies and development systems are used, thus the companies extract more than 30% of their yearly oil-extraction. They allow to reduce the net-cost by a third. At a moment, the oil
companies set themselves a task to achieve commercial effectiveness of their own innovative activities, enough for self-financing.

Innovative activities including development and implementing of enhanced oil recovery methods faces more difficulties. First of all any innovative activity is fraught with risk. Secondly, implementing new enhanced oil recovery methods requires much time, enormous amount of financial resources, powerful material-technical base, chemicals and specially trained workforce. Besides these breaking problems specialists allocate following range of problems:

- Lack of legislation in innovative activities sphere;
- Lack of qualified specialists in designing and implementing new and developed equipment on the market conditions;
- Lack of effective implementing methods.

Foreign companies pay more attention to perspective analysis rather than retrospective. The entrepreneur is interested in surviving in competitive fight and always seeks to get maximum income, that are based on appropriate mathematical calculations.

Yet it constantly focuses CEO’s attention on the chosen beacon and allows manipulations with the resources scheduled by plan, presents management as complete and continuous process, where ingenuity plays a bigger role than strict following of the planned tasks. The following procedure of forming an innovative strategy is proposed:

1st stage: revealing of the prior technological problems in oil field and revealing prior deposits for development;

2nd stage: estimation of the economical effectiveness of the implemented technologies and those planned for implementing for development of prior deposits;

3rd stage: form of the preliminary innovations and investment portfolio, which is complex of innovative projects ranged by criteria of the index yield of discounted investment;

4th stage: estimation of the potentially possible volumes of implementing of innovations considering which the volume growth rate of crude oil and the need for capital investments are defined for every technology by ranked list.

Oil resources are the main components of World energy balance, thus sustainable oil production is a global interest. Much attention is payed to organization of researches on creating methods of increasing of oil production in the countries
with large oil reserves. Regardless the overall thrust of this researches, in different countries they have their own distinctive features.

In Azerbaijan mixed strategy of innovative development is implemented, because large amount of research subjects is run by the government with what government creates possibilities for deployment of activities for the subjects of innovative activities via implementing measures to promote entrepreneurship including innovative one. The core owner of oil-gas production facilities is the state. The major part of this sector is owned by State Oil Company of Azerbaijan Republic (SOCAR), which is a governmental organization. Republic of Azerbaijan is also represented in international contracts by SOCAR. As the core reason of weak integration of science with production we may call firstly that mastering of innovations in this sector is often associated with the reconstructing of production capacities which leads to a long-term suspension of production, secondly implementing innovative projects is accompanied with major investments, thirdly innovative projects are usually bond with risk etc.

Monopoly of state on the oil-gas industry has its own positive and negative features. Positive is that by holding in its monopoly on oil production (extraction and processing) and relevant scientific structures state can easily coordinate their activity and subsequently regulate innovative activity in the sector. At the same time appears negative feature of it: the concurrence which is the mainspring of innovative development is not provided properly. Today the necessity of maintaining of monopoly of state on oil is also dictated by the fact that the major part of entire industry of the Republic of Azerbaijan is oil sector and the state by using all capabilities of this sector may implement stimulating of other spheres which are necessary for social development.

It should be considered that innovative activities in oil-gas industry has its own specifics: it is impossible to create scientific product for this sector abstracting from production. Only collective work of research institution and producing enterprise and multidisciplinary systematical approach to solving of fundamental scientific, technical and productive problems within the framework of innovative projects may give the expected result.

One of the essential problems of oil-gas production facilities of the republic is fall of the flowrate of on-shore wells. Those are mostly old layers and old wells, on which different well-stimulation methods are used. One of those stimulation methods
is biotechnological method of intra-stratal initiation, remarkable by its effectiveness. With this method cost-effective microorganisms and nutrient substrates are pumped into the reservoir. Advantages of this method are the following: environmental friendliness, simplicity of execution, cost-effectiveness and high economical effectiveness.

One of the innovative actions on increasing of oil production is elaboration of filtration process. By this method coefficients of productivity, hydro travelling, reservoir pressure and drainage radius can be defined.

Implementing thermal methods for increasing flowrate provides effective exploitation of fields with high viscous oil. Method of microbiological impact on bottom hole formation zone is used together with these methods for on-shore well production recovery.

Regardless that because of low production rates innovative exploration of oil fields on-shore is less effective, many methods of impact on reservoir are used there. Researches show the perspective of implementing magnetic field method, designed by ASOIU (Azerbaijan State Oil and Industrial University) for increase in efficiency of fishing operations, such as water injections to maintain reservoir pressure, bottom hole treatment, gas hydration control.

In the year 2012 “Scientific Fund of SOCAR” was established to develop fundamental and applied scientific projects in natural and technical sciences a, to enhance scientific researches in oil, gas, petrochemical fields and to stimulate the scientific activities. With the same aims “Scientific Progress Fund of SOCAR” was established the next year.

Table 1.

Amount and cost of scientific researches of SOCAR facilities (cost in ths. man.)

<table>
<thead>
<tr>
<th>Executive Company</th>
<th>RDIOC</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Passing</td>
<td>New</td>
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<td></td>
<td>Amo-</td>
<td>Cost</td>
</tr>
<tr>
<td>PA “Azneft”</td>
<td>25</td>
<td>2395</td>
</tr>
<tr>
<td>Trust “Drilling”</td>
<td>2</td>
<td>200</td>
</tr>
</tbody>
</table>
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<tr>
<th>Company</th>
<th>RDIOC</th>
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<th>Passing</th>
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<tr>
<td>PA &quot;Azneft&quot;</td>
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<td>30</td>
<td>4975</td>
<td>-</td>
<td>13</td>
<td>481</td>
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<tr>
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</tr>
<tr>
<td>&quot;Gas Export&quot; Company</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3550</td>
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<td>-</td>
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<tr>
<td>SOCAR headquarters</td>
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<td>3</td>
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<td>5</td>
<td>65</td>
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<tr>
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<td>2595</td>
<td>40</td>
<td>9885</td>
<td>3</td>
<td>30</td>
<td>18</td>
<td>46</td>
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(Table compiled by the author, source is the report of SOCAR for 2014)

As it is described in the table above, in the year 2014 only 88 research work was done on the facilities of SOCAR, 67 of which done by Research and Design Institute on Oil and Chemistry (RDIOC) and 21 by other facilities. The cost of all works was 13256 thousand manats, 12480 of which spent by RDIOC and 776 by other facilities.

Innovative activity of oil-gas production industry of the republic develops every year. We may observe this via analyzing process of introduction of new technologies on PA “Azneft”. In the year 2014 holding innovative activities on increasing production efficiency of oil production facilities was planned by PA “Azneft”. Thus it was planned to hold 31 innovative activities on 394 objects, 20 of which should be held by RDIOC, 4 by nanotech department, 3 by facilities of PA “Azneft”, 1 by RDOI OGGPC (RDI on Oil-Gas, Geoproblems and Chemistry), 1 by “Izolyte” factory, 1 by SCB (Special Construction Bureau) “Kibernetiki” and 1 by “Oil&GasProServ”.

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount of objects</th>
<th>Amount of activities</th>
<th>Extra oil production (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Plan</td>
<td>Fact</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>45</td>
<td>26</td>
</tr>
<tr>
<td>2013</td>
<td>1052</td>
<td>35</td>
<td>12</td>
</tr>
<tr>
<td>2014</td>
<td>436</td>
<td>36</td>
<td>24</td>
</tr>
<tr>
<td>2015</td>
<td>394</td>
<td>31</td>
<td>17</td>
</tr>
</tbody>
</table>

(Table compiled by the author, source is the report of SOCAR for 2012-2015)
In the shown table above, 23 out of 31 planned activities were held on 433 objects (instead of 394). Amongst those 17 activities were held fully, 6 partially and 8 were not held because of lack of necessary reagents and equipment.

Despite the fact that, the amount of objects of holding innovative activities has dropped from 1075 obj. in 2012 to 433 obj. in 2014, the extra-production has risen by 521% (6 times). This tells us about effectiveness of innovative researches.

Out of all innovative activities the most effective were the following:

• Sand-plug cleaning device (implemented in 132 wells, produced extra 1870.3 tons);
• Contaminations displacement and newest composition fluids (Sulfanolum) into annular space pumping device (implemented in 16 wells of “Neft Dashlari” oil-gas production department, produced extra 2580 tons);
• Implementing bottom hole formation zone fortification by plugging materials of polymer consistence (LAPROL) (implemented in 27 wells, produced extra 1785.4 tons);
• Technology of regulating of appearance of water with elastic-solid mass on production wells (implemented in 7 wells of “Neft Dashlari” OGPD, produced extra 1502 tons);
• Implementing paraffin cutting devices “PADUS-2” (implemented in 12 wells of “Neft Dashlari” OGPD, produced extra 5469 tons; on OGPD named after N.Narimanov on 35 wells, produced extra 22806 tons);
• Implementing microbiological impact of various emission products, serum on layer (implemented in 3 wells, produced extra 627.5 tons);
• Implementing of reagent (NSA-1) aiming enhancing of bottom hole permeability (implemented in 7 wells, produced extra 228 tons);
• Implementing method of impact of foam systems on bottom hole zone (implemented in 4 wells, produced extra 135 tons);

The need in technological innovations becomes completely obvious, as competitive products may only be created based on high-technology processes. Rigid connection of “Producer” and “Updater” (Innovator) may provide the needed development of production, it is even better when the “Producer” is the “Updater”.

Undoubtedly, in the current circumstances high priority must be given to administrative innovations at all levels of administration, including macro and regional

References:
levels, as any imperfections of the administrative system, its inadequacy to the market system inhibits establishment of the market economy.

As a result of the researches the following recommendations that may contribute expansion of the innovative activities of industry, especially oil and gas production industry of Azerbaijan were introduced:

1. It is necessary to create space for venture financing of innovative activities especially through state funds to provide efficient use of the achievements of domestic science.

2. Creation of the system of preferential taxation in innovative sphere may contribute expansion of innovative activities generally, and in oil production industry in particular.

3. The adoption of relevant legislation, in particular law of innovative activities may streamline relations between subjects of innovative activities.

4. It seems reasonable to develop concept of innovative development of oil gas production that is a part of the main concept of innovative development of the economy of Azerbaijan under the auspices of the Ministry of Energetics in order to provide integration between science and industry in oil gas complex.

In order to avoid spontaneity in explorations of oilfields it is important to practice strategic planning of oil production development.

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Substantiation of capital investments of marine oil fields of the later development stage

Abstract: The study of the way to solve the problem of calculating capital investments for offshore oil fields that are in a long period of operation is an important issue. Intensification of oil production from fields requires the solution of a complex production-technical and economic problems on the basis of economic and mathematical modeling to extract large oil and gas reserves.

Keywords: Development, oil, deposit, capital investment, modeling, sea, platform, intensification, reconstruction.

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Nurxanum Dadasova, Senior Teacher, Azerbaijan State University of Oil and Industry
Обоснование капитальных вложений морских нефтяных месторождений находящихся на поздней стадии разработки

Аннотация: Изучение пути решения проблемы расчета капитальных вложений для морских нефтяных месторождений, находящихся длительный период в эксплуатации является важным вопросом. Интенсификации добычи нефти из месторождений требует решения комплекса сложных производственных-технических и экономических проблем на основе экономико-математического моделирования для извлечения большие запасы нефти и газа.

Ключевые слова: разработка, нефть, месторождение, капитальное вложение, моделирование, море, платформа, интенсификация, реконструкция.

ВВЕДЕНИЕ

История разработки морских месторождений акватории Азербайджана начинается с 1904 г., когда промышленная нефть была получена на месторождении острова Пираллахы. С этого периода бурно развивалась добыча нефти из месторождения Чилова, Бухта Ильича, Жилоя, Нефтяные Камни, Сангачал – Дуваны - 8 Марта и Грязовая Сопка - на Каспийском море.

Только за 1950-2015 гг. на Каспийском море было сооружено более 1200 блочных оснований, построены длиной 380 км. эстакады, что позволило пробурить свыше 2800 разведочных и эксплуатационных скважин.

Одной из наиболее актуальных проблем реального сектора экономики является необходимость масштабной модернизации производственной деятельности нефтегазодобывающей промышленности, что в свою очередь требует проведения широкого спектра инвестиционных процессов. По этому принятие инвестиционных решений сопряжено с высоким уровнем риска в ходе инвестиционного проектирования.

В связи с тем, что Азербайджанская нефтяная среда характеризуется повышенным уровнем риска и неопределенности по сравнению с развитыми странами, возрастает необходимость проведения исследований и разработок, направленных на разработку методику анализа риска и управления риском ка-
Питательных вложений нефтегазодобывающих предприятий с учетом специфики условий реального сектора экономики.

Проведенный анализ институтом «Гипроморнефтегаз» показывает, что на старых морских месторождениях извлекаемые запасы нефти составляют более 600 млн.т. Интенсификации добычи нефти из морских месторождений связаны с решением многих технико-экономических проблем. Среди них следует выделить следующие:

- реконструкция или капитальный ремонт гидротехнических сооружений, морских стационарных платформ и эстакад;
- создание (приобретение) специальных технических средств (где глубина моря не превышает от 3 до 10 м.) для геофизических работ, строительства нефтепромысловых объектов и их обслуживание, бурения, эксплуатации и ремонта скважин;
- выбор рациональных конструкций и числа стационарных платформ, приэстакадных площадок и других сооружений для размещения на них оптимального числа скважин;
- форсирование строительства новых эксплуатационных скважин;
- создание малогабаритного и надежного в работе блочного оборудования для эксплуатации и ремонта скважин;
- создание специальных биологических и химических реагентов, обеспечивающих охрану морской среды и т.п.

Сегодня в республике многие проблемы связанные комплексного использования ресурсов нефти и газа на море практически еще не решены. Сложность их решения обусловлена тем, что они связаны со спецификой разработки нефтяных и газовых месторождений на море, сохранение биоресурсов моря и предотвращение загрязнения Каспийского моря с нефтью. Кроме того, один из аспектов проблемы комплексного использования нефтяных и газовых ресурсов связаны с вопросом комплексного проектирования разработки морских месторождений расположенных на прилегающих районах Апшеронского архипелага. Кроме того, одна из наиболее актуальных в настоящее время является совершенствование существующих и создание новых систем разработки и эксплуатации нефтяных и газовых месторождений, разработка и применение новых методов повышения нефтегазоотдачи пластов. Высокая стоимость морской стационарной платформы, стоимость которой часто эквивалентна всей...
стоимости обустройства небольшого месторождения на суше, создает принципиально новые экономические ограничения на выбор системы разработки, проектируемые темпы отбора нефти и газа, размещение сетки скважин и т. п. Также важным вопросом считается использование попутного газа из морских месторождений.

Следует отметить, что каждая морская стационарная платформа имеет определенную зону дренирования в форме окружности. Ее радиус зависит от числа скважин и возможностей отклонения скважин. В случае размещения таких окружностей (т. е. стационарных платформ) на месторождении по касательной, площадь не дренируемой зоны составит около 20 %. Если же размещать платформу таким образом, чтобы обеспечить полное дренирование месторождения, величина взаимно - перекрываемых площадей составит около 30 %. Таким образом, возникает проблема определения оптимального числа реконструкции морских стационарных платформ. При этом при переходе от минимального к максимальному числу платформ для каждой новой реконструированной платформы должна решаться задача оценки эффективности дополнительных капитальных вложений, то есть составляется технико-экономическое обоснование (ТЭО) для сопоставления капитальные вложения в обустройство стационарной платформы и эффект от дополнительной добычи нефти на месторождении в целом. При составление ТЭО необходимо учитывать одну принципиальную особенность, а именно: если на суше бурение дополнительных скважин для уплотнения сетки легко осуществимо и по стоимости эквивалентно или даже дешевле старых скважин, то при разработке старых морских месторождений такой подход практически исключается. Исходя из этого, при проектировании системы разработки морского месторождения и оценке оптимального коэффициента извлечения необходимо большое внимание уделять вопросу конечной стадии эксплуатации месторождения и экономические расчеты вести с уче том прогнозируемых величин эффективности капитальных вложений.

Планирование структуры капитальных вложений осуществляется с целью выявления возможностей повышения их технической эффективности, а также обеспечения необходимой увязки плана капитальных вложений с другими разделами плана геолого-технического и экономического развития. На особенности эксплуатации старых морских месторождений наибольшее влияние
оказывают формирование технологической структуры. Обычно выделяются следующие направления затрат:

- затраты на разведочное и эксплуатационное бурение;
- капитальный ремонт скважин,
- модернизации оборудования, не входящее в сметы строек, и строительство.

Капитальные вложения при освоении морских месторождений в значительной мере зависят от глубины моря в районе работ, поскольку этот фактор обусловливает вид сооружений или технических средств. На мелководье это дамбы, искусственное острова или отдельное основания, на больших глубинах моря — различные типы морских стационарных платформ. Глубина бурения, являющаяся определяющим фактором при бурении на море, в данном случае отступает на второй план.

Наиболее специфическим элементом технологической структуры являются капитальные вложения в строительство нефтегазопромысловых объектов для добычи нефти и газа.

Необходимо отметить, что усредненная технологическая структура имеет достаточно условный характер. Она в значительной мере зависит от природно-климатических условий в районе работ, этапа освоения (начальная или завершающая стадия разработки) и целого ряда других факторов. Однако на всех этапах разработки и стадиях планирования основное внимание следует уделять повышению удельного веса капитальных вложений, направляемых на приобретение машин и оборудования, т. е. созданию активной части основных производственных фондов в общем лимите капитальных вложений с тем, чтобы обеспечить рост объема добычи нефти на 1 руб. стоимости основных фондов и снижение фонддоемкости и удельных капитальных вложений.

Определяемые в структуре капитальных вложений лимиты строительно-монтажных работ является основа для разработки плана подрядных строительно-монтажных работ и плана по труду в строительстве. Для освоения морских месторождений характерны, причем не столько относительно, сколько абсолютно, большие затраты на строительно-монтажные работы. Они связаны главным образом с производством блоков металлоконструкций стационарных платформ и оборудования на берегу, а затем с их установкой и монтажом в море.
Особенности технологии и организации работ по ремонту и восстановлению морских гидротехнических сооружений и стационарных платформ выдвинули ряд новых требований и задач в области планирования структуры капитальных вложений. Мы постарались в данной статье решить научные и методические основы этой проблемы на основе экономико-математического моделирования расчета капитальных вложений для морских месторождений, находящихся на поздней стадии разработки.

В нефтяной и газовой отраслях промышленности накоплен большой опыт использования экономико-математических методов для целей планирования и прогнозирования развития отрасли и, в частности, капитальных вложений. Эти или иные аспекты этой проблемы были предметом исследования большинства ведущих ученых и специалистов в области экономики и прогнозирования развития и размещения этих отраслей [6].

Методология расчета капитальных вложений в освоение морских ресурсов нефти и газа, как одного из наиболее важных разделов плана или прогноза развития, синтезирует не только отраслевые особенности нефтяной и газовой промышленности, но и техническую, технологическую, организационную и экономическую специфику осуществления в рамках одной организации работ на море.

Надо учесть, что составление документов на разработку нефтяных месторождений является комплексной научно-исследовательской работой, требующей творческого подхода, учета зарубежного опыта, современных достижений науки и практики в нефтяной геологии, геофизике, физико-химии пласта и подземной гидродинамики с учетом экономических факторов, требований охраны недр и окружающей среды. Усугубляют сложившуюся в нефтяной промышленности ситуацию с балансовыми и текущими извлекаемыми запасами нефти нахождений месторождений в последней стадии разработки, старения фонда скважин, высокий процент обводненности пластов, ухудшение геолого-технических условий и снижение экономических показателей [1].

Распространенные проектные ошибки капитального вложения при разработке нефтяных месторождений. Их можно группировать таким образом:

♦ Искусственное расщепление проекта принять для того чтобы снизить инвестиционную стоимость проекта.
♦ Проверки экономической жизнеспособности каждого инвестиций без четкой функциональной и стратегической связи между ними.
♦ Просьба о помощи на финансирование части проекта, который не может быть оправдан в отрыве от других функциональных элементов.
♦ Оптимистическая оценка зоны воздействия на основе нереалистичных предположений демографического роста.

На основе такого определения можно сформулировать цели анализа рисков капритальных вложений в следующем порядке:

● выявить величину возможных отклонений в финансовых показателях, характеризующих эффективность инвестиционного проекта;
● выявить факторы внешней среды, неопределенность которых может вызвать отклонения в эффективности инвестиционного проекта;
● определить факторы, изменения в значениях которых вызовут наибольшие отклонения от ожидаемой эффективности инвестиционного проекта.

Анализ экономических показателей. Расчет экономических показателей в денежном выражении основан на наборе заранее определенных целей проекта, давая денежную ценность для всех положительных выгод и отрицательных затрат обеспечение эффектов вмешательства. Общая производительность проекта оценивается показателями, а именно экономическая чистая приведенная стоимость (ENPV), выраженная в денежных ценностях, а экономическая норма доходности (ERR), что позволяет сопоставимости и позиционирования для конкурирующих проектов или альтернативы. В этом отношении наилучшим простым и предполагающим методом является метод анализа чувствительности реагирования. Однако, этот метод также не лишен недостатков - он не дает точную оценку влияния изменения входной переменной на эффективность инвестиционного проекта - оценка делается на основе графика, по крутизне кривой оценивается и дифференцируются переменные как «оказывающие сильное влияние на NPV» и «оказывающие слабое влияние на МРУ». Для более формализованной, количественной оценки, позволяющей точно оценить степень влияния той или иной переменной на показатели эффективности инвестиционного проекта, а также сравнить между собой степень влияния различных переменных, авторами предлагается определять коэффициент чувствительности (K_i) как отношение
процентного изменения NPV к процентному изменению исследуемой переменной. В формализованном виде расчет выглядит следующим образом:

\[ K_i = \frac{\Delta NPV}{\Delta F}, \]  

Где \( \Delta NPV (%) \) - процентное изменение показателя эффективности инвестиционного проекта; \( \Delta F (%) \) - процентное изменение исследуемой переменной.

Экономический смысл этого коэффициента заключается в том, что он показывает, на сколько процентов изменится \( \Delta F \) при изменении входной переменной на один процент. Этот показатель позволяет сортировать переменные по степени их влияния на показатель эффективности инвестиционного проекта (NPV).

К основным преимуществам данного метода относятся: теоретическая прозрачность, простота расчетов и наглядность представления результатов.

Основным недостатком данного метода является его однофакторность, что не позволяет оценить результат капитального вложения при изменении сразу нескольких переменных.

Институтом «ВНИПИМОРНЕФТЕГАЗ» отрабатывалась применительно к составлению схемы развития и размещения добычи и транспорта нефти и газа на континентальном шельфе Каспийского моря и экономико-математическая модель расчета технологической структуры капитальных вложений.

Применительно к освоению морских ресурсов модель содержит следующие основные блоки:

- геологоразведочные работы;
- инженерно-геологические работы;
- поисково-разведочное бурение и прирост запасов;
- плавучие буровые установки, буровые суда;
- гидротехническое строительство;
- добыча и подготовка нефти и попутного газа;
- добыча газа и конденсата; транспорт нефти и газа;
- подводно-технические работы;
- защита окружающей среды и др.

Наиболее эффективный метод решения этой задачи считаем определение на каждом этапе общего цикла работ по освоению ресурсов континенталь-
ного шельфа предельных удельных экономических показателей эффективности, определяемых исходя из условия обеспечения нормативной эффективности конечного результата, т. е. добычи нефти и газа. В качестве таких показателей в отечественной и зарубежной практике обычно используются средний дебит скважин, запасы месторождения или их сочетание. Они могут определяться в любой момент периода освоения на основе фактической информации, полученной на предыдущих этапах работ и прогнозируемой на последующие периоды.

Применительно к освоению морских ресурсов нефти или газа использование предельных экономических показателей было предложено азербайджанскими и зарубежными учеными Ф.М. Гаджиевым, А.Б. Сулеймановым, К.С. Керимовым, В. И. Назаровым, П. Б. Никитиним, А. П. Портновым, Найт Ф.Х. и др. В качестве стоимостной оценки нефти они применяли показатель промышленной ценности единицы запасов [1,2,3,4].

В настоящее время общепринятым критерием считается операционные и эксплуатационные затраты на добычу нефти. Применяемые в Азербайджане замыкающие затраты на нефть и газ практически не учитывают экономической эффективности добычи и транспортировки нефти. По своему экономическому содержанию теоретически рассматривается как цена или стоимость продукции при формировании оптимального плана [7].

Определение удельного показателя ценности нефти. Многие отечественные с зарубежные экономисты считают при расчетах капитальных вложений целесообразным использование мировых цен. Поэтому логическим развитием двух крайних стоимостных оценок направлений использования нефти и газа является их средневзвешенная величина, представляющая собой удельный показатель ценности нефти или газа $Y_p$. Этот показатель в общем виде может быть определен по формуле:

$$Y_p = \frac{\sum_{i=1}^{n} Q_i + \sum_{j=1}^{m} Q_j P_j K_j}{\sum_{r=1}^{p} Q_r},$$  

где $Q_i$ - объем добычи нефти а-го месторождения, направляемой на внутренние нужды страны; $Z_i$ - замыкающие затраты по а-му месторождению; $n$ - число месторождение, для которых установлены затраты; $m$ - число стран-
импортеров нефти; Qэ - объем экспорта нефти в i-ю страну; Рэ - экспортная цена нефти в i-ю страну в валютах США; Kν - коэффициент перевода валюты США на рубли; Qг — годовой объем добычи нефти z-го года планового периода [3,6,8,9,10].

В качестве одного из вариантов использования предельных экономических показателей, возможно разработать и применять в практике технико-экономических обоснований реконструкции и капитальный ремонт старых платформ и оборудования для добычи нефти из морских месторождений, находящихся на поздней стадии разработки с расчетом предельных дебитов или запасов месторождения, обеспечивающих эффективное использование капитальных вложений. Ее основные положения рассматриваются на примере оценки эффективности реконструкции комплекса гидротехнических сооружений (в примере расчета на одну платформу).

За основные параметры, характеризующие продуктивность месторождения принимались извлекаемые запасы, число эксплуатационных скважин и их средний дебит. Объем добычи нефти за период разработки месторождения после реконструкции рассчитывается исходя из числа бурения новых скважин и проводимых капитальный ремонт вводимых скважин и изменения темпа падения дебита по годам. Количество и сроки строительства и ремонта скважин определяется применительно к определенному типу гидротехнических сооружений и геолого-техническим условиям строительства скважин.

Анализ научных исследований зарубежных работ показывает, что при оценке освоение ресурсов океанов и морей по нефти эффективно во всех вариантах обустройства месторождений при дебитах 200 т/сут и более, становится неэффективным при дебитах 50 т/сут при стоимости обустройства в расчете на одну платформу 50 млн. долларов США [4,7].

Однако, указанные критерии оценки могут быть использованы при укрупненной оценке эффективности реализации различных вариантов освоения месторождения. При этом оценка экономической эффективности, а также при анализе их фактического выполнения с учетом комплексной программы научно-технического прогресса по созданию технических средств для освоения нефтяных месторождений, должны выполняться при обосновании остаточных извлекаемых запасов. По сравнению с освоением нефтяных и газовых ресурсов на суше для морской нефтегазодобычи, учитывая ее относительно боль-
шую удельную капиталоемкость в расчете на одну добывающую скважину, влияние перечисленных особенностей носит более острый характер. При расчетах экономической эффективности капитальных вложений и обоснования целесообразности их осуществления целесообразен комплексный подход.

Учитывая многофакторное влияние морской нефтегазодобычи и эффективность комплексного использования ресурсов в практике перспективного планирования капитальных вложений и расчетах их эффективности в настоящее время не учитывается эскалация цен и нормативов эффективности. Теория и методология этой проблемы выходит за отраслевые рамки, она требует проведения огромных прогностических проработок с привлечением самых современных компьютерных программ.

**Основное требование при расчетах эффективности капитальных вложений.** В объеме капитальных вложений, принимаемых для расчета эффективности, должны учитываться затраты по всем источникам финансирования на создание новых основных фондов производственного и непроизводственного назначения, а также затраты, связанные с осуществлением строительства, результаты которого могут и не отражаться в основных фондах. Из этого общего требования следует, что при расчете эффективности капитальных вложений в освоении нефтяных и газовых ресурсов, и в частности морских месторождений, должны учитываться затраты по следующим направлениям:

- геолого-геофизические работы;
- разведочное бурение;
- эксплуатационное бурение;
- строительные работы по обустройству месторождений и созданию производственной инфраструктуры;
- стоимость машин и оборудования, не входящих в сметы строек, если они приобретаются за счет капитальных вложений;
- проектно-изыскательские и некоторые другие работы и затраты на формирование оборотных средств.

В практике оценки экономической эффективности капитальных вложений используется следующие показатели:

- операционные и эксплуатационные затраты на нефть и газ, полученные в результате оптимизации топливно-энергетического баланса;
- предельный норматив приведенных затрат, полученный как величина приведенных затрат по замыкающим месторождениям, исходя из установленного плана добычи;

- промышленная ценность 1 т запасов нефти или 1000 м³ газа, определяемая на основании мировых цен основных нефтепродуктов, которые могут быть получены при переработке из 1 т (1000 м³) исходного сырья;

- мировые цены на нефть и газ с учетом коэффициента перевода валютных долларов во внутренние денежные единицы.

Если ранжировать эти показатели, то получается почти десятикратное колебание между минимальной и максимальной стоимостной оценкой добытых нефти и газа. В этих условиях при выборе расчетного параметра, на первое место выступает требование сопоставимости и целенаправленности выполняемых расчетов. Приоритет, безусловно, должен быть отдан операционным эксплуатационным затратам, которые по своему смыслу предназначены для решения задач эффективного использования капитальных вложений в топливную промышленность, хотя для морской нефтегазодобычи вследствие ее специфического районирования и направленности использования продукции, целесообразно при решении ряда задач использовать также мировые цены с соответствующим их переводом во внутренние денежные единицы. Кроме того, сопоставимость показателей экономической эффективности капитальных вложений по уровню использования ресурсов нефти и газа должна обеспечиваться к основе экономической оценки утраченных запасов. Под утраченными запасами в данном случае, понимаются извлекаемые запасы нефти или газа, которые вследствие нерациональной системы разработки остаются в пласте и практически не могут быть извлечены (обводненные участки нефти, выпавший в пласте конденсат и др.). Освоение морских месторождений нефти и газа связано с необходимостью строительства дорогих гидротехнических сооружений, стоимость которых достигает десятков и сотен миллионов рублей. Сдельные капитальные вложения в расчете на единицу продуктивной площади морского месторождения практически всегда намного выше, чем на аналогичном сухопутном месторождении.

Так называемый очаговый отбор нефти и газа с использованием морских платформ вследствие падения пластового давления и обводнения отдельных участков залежей приводит к безвозвратным потерям ресурсов. Количество по-
терянной нефти и газа в конечном счете, определяется уровнем нормативной эффективности капитальных вложений, который в свою очередь, зависит от действующих замыкающих затрат.

Учитывая указанную специфическую направленность реализации продукции морской нефтегазодобычи при решении ряда задач, стоимость оценка нефти и газа должна осуществляться по мировым ценам.

**ВЫВОДЫ:**

- По сравнению с освоением нефтяных и газовых ресурсов на суше, морской нефтегазодобычи, учитывая ее относительно большую удельную капиталоемкость в расчете на одну тонну добываемой нефти, влияние перечисленных особенностей носит более острый характер;

- Специфической особенностью морской нефтегазодобычи является не-прерывность процесса капитальных вложений. Поэтому оценку капитальных вложений, связанных с разработкой месторождений, находящихся на поздней стадии разработки следует осуществлять ориентируясь на уровень добычи нефти;

- При оценке экономической эффективности капитальных вложений в разработку нефтяных ресурсов необходимо учитывать общие цели для добывающих предприятий, оказывающие определяющее влияние на уровень технико-экономических показателей.

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