Financing Small Scale Contractors through Mobilization Advance Payments for Improved Performance: The Case of the Tamale Metropolis

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Abstract

The construction industry plays an important role in any economy, and its activities are vital to the achievement of the socio-economic development goals of a nation. In Ghana, the construction and housing industry plays an immeasurable role in the national developmental agenda. What however, appears to be debatable is whether the industry wields the much expected driving force required to pronounce its vital contribution towards accelerated national growth in terms of infrastructural development. This paper assesses the extent to which Mobilization Advance Payment (MAP) contribute to the output of small scale contractors in the Tamale metropolis. Thirty (30) construction firms, fifteen (15) consultancy firms and fifteen (15) financial institutions were surveyed, and Chi-Squared (X2) test at α=0.05 was run on responses using SPSS. The study revealed that 49% of key stakeholders in the construction industry in the Tamale metropolis see mobilization advance payment from clients as the most accessible and affordable form of construction financing. This was closely followed by Banks/Saving & Loans (regulated financial institution) with 43%, and 8% for non-regulated financial institutions. A significantly high number of consultants (60%) agreed that mobilization advance payment is the most accessible and affordable form of construction financing. The Chi-Squared (X2) Test on MAP and contractors performance also revealed an X2 statistic of ≈0.711 for a degrees of freedom of 4 which means that MAP arrangements for contractors contribute significantly to their output. Regrettable though, the misappropriation or misuse of such funds by some contractors has resulted in difficulties in accessing mobilization advance payments even by genuine contractors in dire need of working capital. Abandoned projects, delay in project delivery, cost overruns and employment of unqualified personnel among others result from the unavailability of this accessible and affordable form of construction financing. This adversely affects the performance of contractors and the overall project success. It was strongly recommended that clients strive to make mobilization advance payments available and easily accessible to contractors to enhance their performance.

Keywords: Contractors, Construction, Finance, MAP, Performance.

I. INTRODUCTION

The construction industry accounts for a significant portion of the world’s Gross Domestic Product (GDP). The government of Ghana Growth and Poverty Reduction Strategy (GPRS) reported that the construction industry contributed 8.8% to GDP in 2003 and 2004, ranking third behind agriculture (35.99%) and government services (9.98%) [1].

In the developing world, the construction sector provides a substantial source of employment to poor citizens of those countries and also serves as a platform upon which other sectors of the economy are developed [2].

In economic terms, the sector is known to offer a sound basis for revenue collections, thereby providing government with direct and indirect taxes. Construction firms pay direct taxes to local and central government through the normal taxable incomes and mandatory taxes before participating in public procurement. Indirectly, the firms pay taxes through the materials they purchase for construction works [3].

The construction industry in every country faces problems and is beset with all sorts of challenges. However, in developing countries these difficulties and challenges come alongside a general situation of socio-economic stress, long standing resource shortages, institutional weaknesses and a general inability to deal with the key issues [4]. Undesirable project performance results are a major problem affecting construction industries worldwide and mostly developing countries. Gyadu-
Asiedu [5], notes that in developed countries efforts are being made to use performance assessment to monitor and control projects to ensure favourable outcomes in order to obtain value for money and reap other economic benefits. However, one of the major challenges that hinder progress of projects for effective assessment of the industry is the access to finance by contractors.

The rest of the paper is organized as follows: section 2 discusses construction financing; sections 3, 4 and 5 are devoted to the methodology, results and discussion, and conclusion and recommendations respectively.

II. CONSTRUCTION FINANCING

2.1 Working Capital

From the inception of a construction project, the project manager is required to make numerous decisions that will determine the success or failure of the project both in physical and monetary terms. One such decision is the working capital requirement for the successful completion of the project. Working capital is capital available for conducting the day-to-day operations of a project and accounts for about 60% of total investments [6].

Every project needs adequate liquid resources to maintain day-to-day cash flows and pay wages and salaries, and creditors if it is to keep its workforce and ensure its suppliers. Working capital finance is required to bridge the time between expenditures and revenues [7]. Maintaining adequate working capital is not just important in the short term but also in the long term to ensure the survival of the business [8].

According to Eyiah and Cook [9] contractors’ effective participation in the industry has been affected by several constraints in Ghana. Lack of access to finance is arguably the most critical of these constraints. Contractors do not have sufficient collateral to obtain finance from commercial banks since most indigenous contractors in Ghana have been classified under the Small and Medium Scale Enterprises (SME) category of businesses. In essence one of the most pressing problems of small and medium scale contractors is obtaining the working capital required for projects [10].

2.1.1 Funding Sources for Working Capital

Common sources of financing for working capital in a typical construction project include: trade credit, accrued expenses, differed income and bank borrowing [11].

- Trade Credit

Credit that a contractor gains from suppliers of goods in the normal course of business in a day before payment is made is referred to as trade credit. With this kind of arrangement, the contractor does not have to pay cash immediately for any purchases made. Rameezdeen and Amaratunga [12] explains that small scale contractors heavily depend on trade credit as a source of finance since they find it difficult to raise funds from banks or other sources in the capital market. Trade credit is a spontaneous source of financing. The major advantages of trade credit include easy availability, flexibility, and informality. Trade credit appears to be cost free since it does not involve explicit interest charges though in practice, it involves implicit cost.

- Accrued Expenses

An accrued expense is another spontaneous source of short term financing. Accrued expenses are a more automatic source since by definition they permit the contractor to receive services before paying for them. Therefore, they represent spontaneous, interest-free sources of financing. The most important components of accruals are wages and salaries, sub-contractor payments, taxes and interest.

- Differed Income

Deferred income represents funds received by the contractor for the services he or she has agreed to supply in the future. These receipts increase the contractor’s financial strength in the form of cash. Therefore, this constitutes an important source of financing. Advance payment made by the client constitutes the main item of deferred income.

- Bank Borrowing

Banks are the main institutional sources of working capital finance. After trade credit, bank credit is the most important source of financing working capital requirements. A contractor can draw funds in the form of overdrafts, cash credits, purchase or discounting of bills, letter of credit, and working capital loans. Banks generally do not provide working capital finance without adequate security.

2.2 The Concept of Mobilization

Construction firms are always faced with the huge burden of securing funds for executing work on contracts. Rameezdeen and Amaratunga [12] explain the concept of mobilization advance payment as an important mechanism used to overcome contractors’ financial problems in developing countries.

Mobilization advance is a monetary payment made by the client to the contractor for initial expenditure in respect of site mobilization, and a fair proportion of job overheads or preliminaries [4].

The main objective of Mobilization Advance Payment (MAP) is to help overcome financial difficulties of small and medium scale contractors. It was promoted by the World Bank as a temporary measure to develop small and medium scale contractors in the early 1980s and usually constitutes...
20% of the initial contract price. It is also considered to be a win-win option of initial financing for both clients and contractors due to its positive impact on contractors’ cash flow. Advancement of money to contractors before project execution reduces contractors’ need to lobby for working capital. Unfortunately, some contractors misuse their mobilization advance payments and fail to fulfill their contract obligations [10].

2.2.1 Merits of granting MAPs to Contractors
The research conducted by Rameezdeen and Amaratunga [12] in Sri Lanka and in some developing countries revealed the following as merits of providing mobilization advance payments to contractors.

- Financial assistance
  MAP provides a means of financial assistance to most medium and small scale contractors and even large scale contractors who do not have sufficient working capital to finance construction projects. It relieves most contractors of difficulties they encounter in securing bank loans and reduces overall cost of financing.
- Interest free loan
  MAP is an interest free loan given by clients to enhance contractors’ working capital and cash flow.
- Repayment based on value of work executed
  If a contractor borrows money from a bank he or she has to repay irrespective of the value of work completed. However, the repayment of mobilization advance payments is proportionate to the amount of cumulative work completed.
- Informal security given by clients
  The practice of clients providing a ‘Payment Guarantee’ is not popular in most developing countries.
- Motivator
  Mobilization advance payment motivates the contractor at different stages of the project life cycle. It motivates the contractor to bid for projects. Then at inception, the contractor is motivated to commence work at the earliest possible date. Finally, it motivates the contractor to complete a project on time and with the desired quality.

2.2.2 Demerits of granting MAPs to Contractors

- Misappropriation of MAPs
  Contractors use the excess money on other projects and even on non-constructional activities.
- Difficulties in obtaining guarantee
  In order to benefit or gain access to MAP, the contractor has to provide an unconditional first-hand demand guarantee from a bank. This is purely a financial guarantee as it is in lieu of the funds provided by the client. Most often small and medium scale contractors do not have enough resources to secure a guarantee of such an amount or nature.
- Cost to the client
  Even though MAP is an interest free loan, there is an opportunity cost for the client. This is very often overlooked by many practitioners.

III. METHODOLOGY

3.1 The Study Area
The Tamale Metropolis is centrally located in the Northern region of Ghana and occupies approximately 750 km sq. It shares boundaries with Savelugu-Nanton District to the north, Tolon-Kumbungu District to the west, Central Gonja District to the south-west, East Gonja District to the south and Yendi District to the east. Population of the metropolis is estimated at 537,986. This is made up of 49.1% male and 50.9% female. It is the only predominantly urban area in the region with an urban population of 67.1% [13].

3.2 Target Population and Sampling Techniques
The population for the study consisted of contractors or their project managers from building construction firms, the professionals i.e., quantity surveyors, engineers, architects from construction consultancy firms and credit officers or managers in the financial institutions in the Tamale Metropolis.

Aimed at obtaining an understanding of how access to finance by small scale contractors affect the entire industry performance, the major stakeholders identified as units of enquiry in the industry were contractors and construction managers in the built environment, financial institutions and the professionals who coordinate and supervise the projects.

Purposive sampling was used in the study by identifying the various respondents in the sample elements and issuing them questionnaires to respond.

3.2.1 Sampling Size Determination
The Ministry of Water Resources, Works and Housing has a little over 20,000 registered building contractors in Ghana and approximately 1% of these building contractors are in the Tamale metropolis. This means that, the metropolis has approximately 200 registered building contractors. The minimum sample size of these registered contractors in a metropolis can be calculated as a basis for determining the actual size of the firms by using the formula propounded by Kish (1965) as cited in [14] as below:

\[ n = \frac{k}{1 + \frac{k^2}{N^2}} \]  

where \( n \) = sample size, \( N \) = population size.

\[ k = \frac{S^2}{V^2} \]  

where \( S \) =maximum standard deviation in the population element (total error = 0.1at a confidence level of 95%)

\[ V^2 = \text{standard error of sampling distribution} = 0.05 \]

\[ S^2 = P(1 - P) \]  

where \( P \) is the population elements.
Therefore, given \( P \) as 0.5 and by substitution into (3.3):
\[
S^2 = 0.25
\]

In determining the minimum sample size of contracting firms in the Tamale metropolis given that \( N \) is 200 with an \( S^2 \) value of 0.25 and by substituting \( S^2 \) into (3.2):
\[
k = 100
\]

Given \( k = 100 \), (3.1) is evaluated to give an \( n \) value of 66 meaning that the minimum sample size of contracting firms in the metropolis was about 66. This figure helped in estimating the actual sample size for the study.

Oladapo [15] and other researchers have indicated that a response rate of 30% is good enough for analysis in construction research. Thus, given a minimum sample size of 66 and a response rate of 30%, the actual sample size used for the study was 60.

In order to obtain results that can be generalized for the entire industry, the study also took into account the views of construction consultancy firms and financial institutions whose population data in the Tamale metropolis were non-existent. Therefore, 30 construction firms were sampled following the assertion made by [15]. The sample size for consultancy firms and financial institutions were 15 each respectively.

3.3 Data Collection Procedures

The study utilized both primary and secondary sources of data. The primary data were collected through the use of questionnaires and interviews administered to managers and staff of the case institutions. Secondary sources of data included desk studies, which involved in-depth review of published and unpublished material in the area of financing of small scale contractors and mobilization advance payments on contractors’ performance in the construction industry. Questionnaires were administered to major stakeholders of the construction industry namely; the professional practitioners or consultants (Architects, Engineers, Quantity Surveyors and Technicians), the financiers i.e., financial institutions or banks and finally the contractors or their project managers in the Tamale metropolis.

3.4 Data Analysis

Primary data generated by the study were cleaned to ensure consistency and transcribed into coded form using the Statistical Package for Social Scientists (SPSS).

The data was examined, categorized, tabulated and recomposed to address the research objectives. It was also edited and tallied in frequency tables and charts. The values corresponding to frequencies were then converted into percentages.

The Chi-Square (X2) test was employed to infer whether differences existed in the responses from all categories of firms and test of hypothesis. Sixty (60) firms were surveyed with thirty-five (35) responding.

IV. RESULTS AND DISCUSSION

4.1 Effects of Difficulty in Accessing Funds for Projects

Difficulties serve as major barriers to the development or growth of businesses thereby crippling their sustainability as the engine of growth of developing economies of which the construction industry is no exception. Difficulties in accessing funds for projects the study revealed, lead to abandoned projects, delay in project delivery and cost overruns. This is illustrated in fig. 4.1.

![Figure 4.1: Effects of difficulty in accessing funds for projects](image)

Source: Field Survey, June 2012

41% of respondents comprising consultants, contractors and financiers indicated that the difficulty in accessing credit facilities for projects leads to abandoned projects, delay in project delivery and cost overruns. 22%, 14% and 10% of respondents affirmed that difficulty in accessing funds for projects leads to cost overruns, delay in project delivery and abandoned projects only, respectively. 4% of the respondents indicated that abandoned projects and delay in project delivery is as a result of difficulties in accessing credit facilities whiles 9% thought that these difficulties result in abandoned projects and cost overruns. These effects have rippling repercussions on the economy of the nation. For instance, cost overruns due to fluctuations in cost of materials and labour wage rates swell government budgetary allocations and expenditure.

According to Badiane [16] completed projects are vital to the pursuit of economic activities as they provide the platform needed for the production of all goods and services, and mainly employs unskilled,
semi-skilled and skilled labour force thereby influencing the rate of employment.

4.2 Mobilization Advance Payment and its Accessibility

The study also sought to identify how mobilization advance payments to construction firms help in the face of these difficulties. The assertion made in the literature is that mobilization advance payment is the most accessible and affordable form of construction financing. Table 4.1 shows responses of the major stakeholders for the most accessible and affordable forms of funds for construction projects.

Table 4.1: Stakeholders reaction to the most accessible and affordable forms of funds

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Banks/Saving &amp; Loans (%)</th>
<th>Mobilization Advance Payment from client (%)</th>
<th>Non-regulated Financial Int. (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy Firms</td>
<td>40</td>
<td>60</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Construction Firms</td>
<td>31</td>
<td>44</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>Financial Institution</td>
<td>57</td>
<td>43</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Average ratings</td>
<td>43</td>
<td>49</td>
<td>8</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Survey, June 2012

With an average response rate of 49%, the respondents comprising of consultants, contractors and financiers indicated that mobilization advance payment from clients to contractors is the most affordable form of construction financing. It was also observed that 43% of respondents saw Banks/Saving & Loans (regulated financial institution) as the most accessible and affordable forms of construction financing. The relatively high average rating for Banks/Saving& Loans was largely as a result of more response for that option from the financial institutions as it falls in their interest. 8% of the respondents saw non-regulated financial institutions as the most accessible and affordable form of construction financing.

Mobilization advance payment according to Rameezdeen and Amaratunga [12] is an interest free loan that clients grant contractors to relieve them from the burden of finding initial working capital for project execution. It also helps the construction firms in maintaining a consistent cash flow thereby enhancing the contractor’s ability in the attraction and retention of high calibre professionals for the execution and management of projects. However, in Ghana most contractors do not get any assistance from clients in terms of mobilization advance payments even though 60% of consultants agreed that mobilization advance payment is the most affordable form of construction financing.

4.3 Chi-Squared (X2) Test on MAP and Contractors Performance

Chi-Squared test was used to determine whether differences existed in responses from all the categories of firms. The result of Chi-Squared test is achieved by stating the hypothesis, computing the observed and expected values from the responses, computing the X2 statistic and p-value.

The X2 statistic measures how far away the observed value is from the expected one and it is the sum of each of the contributions from the category of responses. The p-value is computed by reading under the Chi-square table with its corresponding degrees of freedom (see Appendix).

Table 4.2 shows the results of computed observed values and expected values on MAP on contractors’ performance from respondents

Table 4.2: Chi-square table for MAP on contractors’ performance

<table>
<thead>
<tr>
<th>Responses</th>
<th>Observed N</th>
<th>Expected N</th>
<th>Residual</th>
<th>Chi-squared value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td>26.571</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Somewhat Agree</td>
<td>4</td>
<td>7</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td>7</td>
<td>-6</td>
<td></td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>1</td>
<td>7</td>
<td>-6</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey, June 2012

- Hypothesis
  - $H_0$: Mobilization advance payment arrangements for contractors do not enhance their output.
  - $H_1$: $H_0$ is not true (two-tail)
  - where, $H_0$ denotes the null hypothesis and $H_1$ denotes the alternative hypothesis with a significant level ($\alpha$) = 0.05
  - $H_0$ is rejected when $X^2_{cal} > X^2_{0.05,4}$ and $H_1$ accepted.

- $X^2$ Statistic
  - The $X^2$ statistic is calculated using (4.1) below:

$$X^2 = \sum \frac{(\text{observed proportions} - \text{expected proportions})^2}{\text{expected proportions}}$$

The observed and expected proportion values are generated from SPSS. All responses indicated in Table 4.2 are computed from (4.1). For instance, the $X^2$ for the ‘strongly agree’ response is calculated as follows: $X^2 = (17 - 7)^2/7 = 14.29$

Thus, the $X^2$ statistic = 26.571 which is the sum of each response in Table 4.2.
Degrees of freedom

The degree of freedom is 4. This is then read from the Chi-square table (see Appendix) under significant level (α) = 0.05. This gives an \( X^2 \) value of \( >0.711 \).

Since \( X^2_{\text{cal}} > X^2_{0.05,4} \) i.e., 26.571 > 0.711, the null hypothesis (\( H_0 \)) is rejected and \( H_1 \) accepted. This means that mobilization advance payment arrangements for contractors contribute significantly to the output. This also means that there is evidence of a relationship between responses from consultants, contractors and financiers on mobilization advance payments enhancing industry performance.

V. CONCLUSION AND RECOMMENDATIONS

Difficulties in accessing funds for initial take-offs of projects contribute negatively to project success thus hindering the overall performance of the construction industry. For instance, the inability to gain access to funding for projects leads to the difficulty of firms to retain qualified personnel. Project managers are therefore, tempted to engage less qualified personnel to perform functions of otherwise highly qualified professionals to reduce costs which affect the project output. Most clients are often left dissatisfied since their project outputs are not value for the investment.

For both public and private sector clients in Ghana, it has become the norm for construction work to drag on well beyond stated completion dates, overrun of budget and no delivery of the quality of work required. There have also been incidents of customer dissatisfaction resulting from the inability of products and services delivered by the firms to aptly meet the needs and expectations of customers. Clients of the construction industry continue to complain about the industry’s performance and its seeming inability to deliver projects on time, within budget and to expected quality standards [17].

These effects have rippling repercussions on the economy of the nation as delays in project delivery due to fluctuations in cost of materials and labour wage rates swells government budgetary allocations and expenditure.

The study observed that granting of mobilization advance payments to contractors by clients and consultants improves credit accessibility which enhances the performance of contractors.

It is therefore strongly recommended that clients strive to make mobilization advance payment available and easily accessible to contractors to enhance their performance and save them the burden of relying on banks for initial working capital with high charges that rob them of their profits. This would also help construction firms engage qualified personnel to produce excellent outputs.

REFERENCES

APPENDIX

Chi-Squared (X²) Table

| df | X² 0.000000005 | X² 0.00000157 | X² 0.00000315 | X² 0.00000631 | X² 0.00001263 | X² 0.00002526 | X² 0.00005052 | X² 0.00010104 | X² 0.00020208 | X² 0.00040416 | X² 0.00080832 | X² 0.00161664 | X² 0.00323328 | X² 0.00646656 | X² 0.01293312 | X² 0.02586624 | X² 0.05173248 | X² 0.10346496 |
|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1  | 0.000000005    | 0.0010104      | 0.0020208      | 0.0040416      | 0.0080832      | 0.0161664      | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 2  | 0.00010104     | 0.0020208      | 0.0040416      | 0.0080832      | 0.0161664      | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 3  | 0.00020208     | 0.0040416      | 0.0080832      | 0.0161664      | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 4  | 0.00040416     | 0.0080832      | 0.0161664      | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 5  | 0.00080832     | 0.0161664      | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 6  | 0.00161664     | 0.0323328      | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 7  | 0.00323328     | 0.0646656      | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 8  | 0.00646656     | 0.1293312      | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 9  | 0.01293312     | 0.2586624      | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 10 | 0.02586624     | 0.5173248      | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 11 | 0.05173248     | 1.0346496      | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 12 | 0.10346496     | 2.0693001      | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 13 | 0.20693001     | 4.1386002      | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 14 | 0.41386002     | 8.2772004      | 16.5544008     | 33.1088176     | 66.2176353    |
| 15 | 0.82772004     | 16.5544008     | 33.1088176     | 66.2176353    |
| 16 | 1.65544008     | 33.1088176     | 66.2176353    |