“Managing capital investments at South African private universities”

AUTHORS	Moonsamy Naidoo

ARTICLE INFO	Moonsamy Naidoo (2011). Managing capital investments at South African private universities. *Problems and Perspectives in Management*, *9*(1)
RELEASED ON	Tuesday, 22 March 2011
JOURNAL	"Problems and Perspectives in Management"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES
0

NUMBER OF FIGURES
0

NUMBER OF TABLES
0

© The author(s) 2026. This publication is an open access article.

Moonsamy Naidoo (Australia)

Managing capital investments at South African private universities

Abstract

Private universities in South Africa face the daunting task of securing funds to meet their short-term operating costs and their long-term investments in capital projects. The purpose of the paper is to investigate the process in which private universities make capital investment decisions against the backdrop of direct competition from government funded public universities. A theoretical and empirical study was carried out in this investigations. A brief overview of the higher education market in South Africa is presented and a review of the literature on capital investment decisions and techniques is undertaken. A research questionnaire was send out in November 2005 to forty-five registered private universities focussing amongst other things on appraisal techniques used in capital investment decision-making and sources of long-term funds. The study revealed that more than half of the respondents never used the simpler discounted payback method, instead relying heavily on the more complicated method of internal rate of return and net present value. Further to this, private universities were reluctant to invest in capital projects, and cautiously invested in short-term less risky capital projects. It was not surprising to note that private universities relied solely on student fees, bank loans and donors as their main source of funds, as they received no funding from the government. There is a perceived gap with the practise at private universities and the theory. This study will prove to be useful to prospective foreign countries that wish to invest in private universities in South Africa and other emerging economies.

Keywords: capital investment decisions, private universities, source of funds, appraisal techniques, payback, internal rate of return (IRR) and net present value (NPV).
JEL Classification: M40.

Introduction

Private universities in South Africa have experienced a major upheaval in the higher education market. Legislation by the Department of Education together with the mergers of public universities has resulted in many closing down (Macgregor, 2008). Private universities receive no government funding and rely solely on donors and investors to fund their activities.

Private universities in South Africa, like their counterparts in other countries around the world, have generally pursued the profit motive as the reason for their existence, although their mission statements may not openly declare this (Vergnani, 2001; Froneman, 2002; Levy, 2002; Mabizela, 2002; Kruss, 2004). Many critics view private higher education as "bad", and public higher education as a "public good" that the government must regulate and provide for (Kruss, 2004). The government and students are often sceptical of private provider's promises and tend to focus on their ulterior motives, which are their profit making intentions (Kruss, 2004).

As a result of the merger of public universities, government financial support to public universities, new legislation and "poor" perceptions of private universities, there has been a decrease in the enrolments at private universities. This, in turn, has led to a drop in income and profits for institutions that pursue the profit motive and run as a business enterprise with shareholders requiring high returns. One of the major factors in looking at this reconfiguration is the question of managing costs and funds to finance these costs. In order to survive, it is obvious that most institutions will have to manage their limited funds effectively and efficiently in order to be sustainable (Naidoo, 2006).

This study investigates the appraisal techniques used in capital investment decision-making and sources of long-term funds at private universities.

1. Capital investment decisions

Although the funding of fixed assets (excluding land) is provided for in the funding formula (South Africa, 1989), higher education institutions still need to make major decisions with respect to choosing specific items of fixed assets from a range of alternatives. According to Drury (2001), the capital investment decision normally represents the most important decision that an organization makes, since huge sums are invested which cannot be re-im-bursed. Figure 1 reflects a decision-making model for capital investment decisions.

A major decision criterion in capital investments is always about what amount of money to invest in the initial stages of the product. The investment also impacts on the business profile of the organization. If an organization has surplus funds to invest then the opportunity cost foregone of alternative use of surplus funds must also be considered. Capital investments are also associated with risk factors.

© Moonsamy Naidoo, 2011.

Table 1. Factors that increase risk and factors that decrease risk

Factors that increase risk	Factors that decrease risk
1. Large investment size relative to the company's total investment (assets).	1. Large potential for recovery of investment through resale of the investment asset.
2. Long-term recovery of the cost of the investment.	2. Recovery of the investment in a short period of time.
3. Management inexperience with similar investments.	3. Management experience with similar investments.
4. Difficulty in reversing the investment decision.	
5. Considerable uncertainty about whether the asset will perform as expected.	

Source: Ingram, Albright et al. (2001).

An organization is at greater financial risk if a capital investment, which is a large investment in terms of the size of the organization, fails. The risk will be smaller, where an organization makes a few smaller investments in different projects.

Two other factors that always need to be considered are:

1. *Technology risk*. There is always the danger that the technology applied to a capital project may become obsolete.
2. *Cash flow risk*. The impact of inflation may lead to the possibility of not being able to accurately forecast cash flows in the long-term. The impact of currency fluctuations on cash flows is always difficult to estimate.

In evaluating capital projects, the long-term allocation of funds within the business is not only to select the most profitable project. Management should look at maximising long-term returns and, thus, long-term success. This means that, whilst a financial analysis may result in a preferred ranking, a strategic analysis by top management is essential to prioritise projects in terms of the strategic plan of the organization. Top management decision is influenced by the other factors, which Hirsch (2000) indicates as a post audit evaluation of decisions. Two other factors include:

1. *Non-quantifiable factors.* Generally, financial information is used as a basis for calculations, but should not be the only criteria. It may be financially worthwhile to invest in the latest computer technology, for example, but would be strategically unwise if it were to lead to retrenchments that would be detrimental to the image of the firm.
2. *Management preferences.* Managers are sometimes driven by motives of profit or other targets rather than cash flow principles. Managers may wish to do what is convenient and practical to them.

Management can gather specific monetary and non-monetary information for each asset or project to ensure the best decision.

The following methods of capital investment appraisal are advocated by many writers, including Drury (2001), Louderback, Holmen et al. (2000) and Hansen and Mowen (2000).

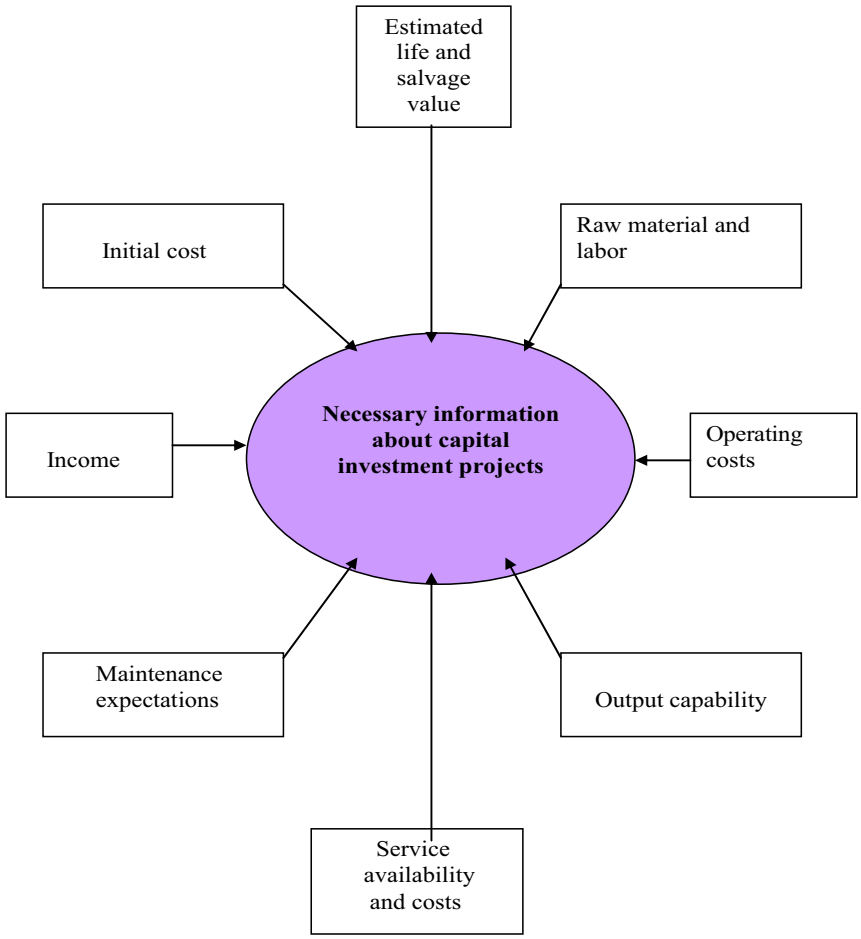
1.1. Payback. This is the simplest of methods used in the appraisal of most capital investment projects. The payback period is determined by computing the period over which the amount of investment is repaid. The technique is based on calculating the cash flow, arising from the project each year, which, thus, becomes available for use in other areas of the business. This can be illustrated in the following simple example:

Table 2. Payback period

	Project A	Project B
Initial investment	500 000	500 000
Cash inflows year 1	200 000	300 000
Cash inflows year 2	200 000	150 000
Cash inflows year 3	100 000	25 000
Cash inflows year 4	0	25 000

Note: Based on independent research.

Project A reflects a shorter payback period than Project B. The decision-making criterion, used under the payback method, indicates that the more quickly the cost of the investment can be recovered, the more desirable is the investment (Garrison and Noreen, 2000).



Source: Barfield, Raiborn et al. (1998).

Fig. 1. Capital investment information

Louderback III et al. (2000, p. 342) and Ingram et al. (2001, p. 391) suggest that there are significant arguments for the use of the payback period. These can be listed as follows:

- it is significant to a company that is concerned with liquidity. Companies would want to recover their outlay in the quickest possible time;
- it can serve as a rough screening device for investment proposals;
- a long payback period means a low rate of return and this can be used as a measure of risk against inflation, new technology and interest rate increases;
- it can be helpful in deciding whether to invest in projects in foreign countries, since investors need to consider aspects relating to the risk of nationalisation, inflationary conditions in foreign countries, trade restrictions, exchange rate fluctuations and changes in policies. Chrysler Motor Manufacturing withdrew from China when the country required the company to hand over all it's technology so that it could sell the design to other Asian countries, while Mercedes accepted these conditions (Louderback, Holmen et al., 2000).

However the payback period has serious flaws. It is not a true measure of the profitability since it only tells a manager the period required to cover the original investment. Another major deficiency of the payback method is that it does not consider the time value of money (Garrison and Noreen, 2000). If we reconsider Table 2, it is reasonable to suggest that Project B is actually better since more money is recovered earlier. These obvious and serious disadvantages of the simple payback method have led to the development of the more sophisticated discounted cash flow models.

1.2. Discounted cash flow models. *1.2.1 Net present value method (NPV).* The present value of future cash inflows involves the inverse process of compound interest. This represents the "present value of the net cash inflows less the project's initial investment outlay" (Drury, 2001). Using discounted cash flows will enable the decision-maker to identify the present value of all future cash flows over the life of any project. The present value of all required investments, when deducted from the present value of all cash inflows, will result in the NPV of the overall project. A positive or more favourable NPV suggests that the investment should be made in

that specific project. A key advantage of the present value method of using discounted cash flows is that a number of projects with various economic lives can be satisfactorily compared.

1.2.2 Internal rate of return (IRR) or discounted rate of return method. IRR is defined as the interest rate that sets the present value of a project's cash inflow equal to the present value of the project's cost (Hansen and Mowen, 2000). The IRR can be used to assess the acceptability of investing in a project. If the IRR exceeds the cost of capital then the project is acceptable.

Barfield et al. (1998, p. 819), in evaluating the IRR method, argues that there are three major drawbacks of using this method. These can be listed as follows:

- problems of calculating the IRR when there are uneven cash inflows;
- the difficulty of using present value tables without fractional interest rates;
- the possibility of finding several rates of return that will make the net present value of cash flows equal to zero.

1.2.3 Discounted payback method. This method calculates the payback period to its present value after discounting the cash flows of future periods. The discounted payback method overcomes the main criticism of the payback period – that it ignores the time value of money. It gives a more realistic indication of the payback period (Dugdale and Drury, 1993). Moreover, the use of this method can provide better information for decision-makers.

2. Capital investment decisions in higher education institutions

According to Langfield-Smith (2009), there are six stages in capital expenditure decision process, namely, project generation, estimation and analysis of projected cash flows, progress to approval, analysis and selection of projects, implementation of projects and post-implementation of projects.

In using capital investment appraisal techniques at universities, Cropper (1996) found that "41% of higher education institutions use it often or always". This indicates that higher education institutions place some reliance on capital investment appraisal techniques in deciding whether to make an investment or whether to choose another alternative. There is a difficulty in comparing the use of capital investment decisions in higher education institutions with those of commercial organization, since, as Cropper (1996) suggests, these educational institutions have a problem "placing a value on qualitative benefits". Carter (1992, p. 59) advocates the use of a multi-attribute decision model (MADM) to take into account "quantitative financial and non-financial as well as non-quantitative factors" in capital decision-making. In the MADM model the analyst rates the courses of action by weighting factors. Table 3 illustrates an MADM model of a manufacturing enterprise. MADM models for capital investment decisions in higher education can be created on the same basis to take into account non-quantitative factors as well as the objectives of the institution.

Table 3. Worksheet for the multi-attribute decision model (MADM)

Factors	Existing technology	New technology
	Weights ratings confidence scores	Weights ratings confidence scores
Quantitative financial* net present value payback	15 x 2 x 0.8 = 24 15 x 2 x 0.9 = 27	15 x 0 x 0.6 = 0 15 x 0 x 0.9 = 0
Quantitative non-financial* reduce complexity improve quality	10 x 1 x 1.0 = 10 30 x 1 x 1.0 = 30	10 x 2 x 0.9 = 18 30 x 2 x 0.9 = 54
Non-quantitative* company image design flexibility	15 x 1 x 0.8 = 12 15 x 1 x 1.0 = 15	15 x 2 x 0.9 = 27 15 x 2 x 0.9 = 27
Sum of factor weights	100	100
Composite for new technology		126
Composite for existing technology	118	118
Net advantage		8

Note:* many factors could be used in each category, but the sum of the factor weights always equals 100.
Source: Carter (1992).

In the South African higher education scenario, fees, charged for courses in the Natural Sciences group, are higher than those in the Human Sciences in keeping with the weighting of the effective subsidy student (ESS) calculation, in which one full-time equivalent (FTE) instruction/research personnel unit will be provided for 15 ESS in the Natural Sciences as opposed to one FTE instruction/research personnel per 42 ESS in the Human Sciences (Department of National Education Report 02-326, 1992, p. 3). This adjustment factor also allows courses requiring more specialised equipment and personnel (Natural Sciences group) to be justifiably weighted.

In short, course costing, day release programs and other academic courses that were not considered in the original budget estimates are generally used in the principle of marginal costing (Burnett, Smith et al., 1992). In terms of the principles of marginal costing "excess (unused) capacity" can be used to improve the organisation if the firm's profitability is improved (Henk and Spoede, 1991). Similarly, in higher education institutions, short courses can be offered if there is excess capacity and the income

from such offerings exceed the variable costs. This is a typical short-term decision (Horngren, Bhimani et al., 1999).

In more developed higher education systems, government and government agencies assist in providing guidelines for making capital investments (e.g., the Higher Education Funding Council for England in the United Kingdom is the responsible agent that provides explicit guidelines to higher education institutions).

3. Empirical studies

3.1. Research design. On November 23, 2005, there was one hundred private higher education institutions registered with the Department of Education, which comprised the population of this study (Naidoo, 2010). It was decided to eliminate fifty-five institutions from the population since they had fewer than fifty students enrolled. The remaining forty-five institutions were ranked in terms of their student enrolments. There were 30 institutions which had student enrolments below 600 and 15 had enrolments over 600. Of the forty-five questionnaires sent out, eight declined to respond citing confidentiality reasons and that the study was irrelevant to them. There was no response from six institutions. In total, thirty-one questionnaires were returned, resulting in a response rate of 69%. For the purpose of this study, small institutions had student enrolments of below 600 and large institutions had student enrolments of over 600.

The questionnaire addressed the following questions amongst others.

3.2. Research findings. The use of financial appraisal techniques. Figure 2A (see Apendix), indicates the extent to which appraisal techniques are used in all institutions. It indicates that internal rate of return (a mean of 3.5) and the net present value (a mean of 3.5) methods are the most popular financial appraisal techniques at most institutions. The payback (a mean of 2.4) and discounted payback methods (1.9) are not popular methods of appraisal. It is quite evident from Figure 2B and 2C that larger institutions tend to make more use of the financial appraisal techniques than smaller one. This is supported by the fact that larger institutions are actively involved in the industry with demands from shareholders to perform. It can be inferred from this data that since private universities rely solely on private funds, they must meet their investors required rate of return. Hence, they will use the weighted average cost of capital (WACC) when using the IRR.

It is puzzling to note that large private universities prefer the IRR over the NPV. One of the shortcomings of the IRR over the NPV method is that the IRR invest cash flows at the same rate for the projects duration, but the NPV method is flexible in allowing for adjustment to the rate of return or other risk variables. A possible reason for this strange situation may be due to the fact that private universities tend to receive funding from investors that require a stable dividend and capital return. This may be also determined from Figure 4 (see Appendix).

The discounted payback method is popular with larger institutions (a mean of 3.6), yet the ordinary payback method is always used by 11% of the respondents. The payback method is an important screening tool to eliminate projects when many projects need to be accepted in a short space of time. Deciding on projects, especially when too many are being considered is an expensive process and the payback method can expedite this process and reduce costs associated with this process. It can be assumed that private universities do not invest heavily in capital projects due to the shortage of funds and a lack of investments into long-term projects.

3.3. Payback periods used for capital investments. The payback period without considering time value of money can be used as a quick scanning tool for capital projects. As mentioned above, most private universities do not invest in many capital projects, hence their limited use of this method.

Figure 3 (see Appendix) shows that the average payback period is between two and three years. Smaller institutions tend to have shorter payback period as compared to larger ones that prefer a three-year period. The length of the payback period will also be dependent on the type of investment. One of the issues with the payback period is that cash flows after the payback period is not considered in the decision-making process. Some projects may receive substantial cash inflows after the payback period, which could severely impact on embarking on the project.

The short payback period of between 2 to 3 years indicate that private universities, especially smaller ones, do not embark on long-term projects but wish to see quick returns. They are also do not wish to take risks, as the longer the project's duration the greater the risk of projecting inaccurate cash flows.

3.4. Rates of return. The minimum rate of return is between 8 and 13 percent, but for smaller institutions this rate is between 8 and 10 percent, when compared to larger institution that require a minimum rate of between 10 to 13 percent (see Figure 4, Appendix). This implies that larger institution due to their size in the industry would require a larger minimum return to satisfy shareholders. These rates

of returns are substantially low when compared to the overall market return in 2005, which was 30% (ClickAfrique.com, 2006). So, why the big divide in returns? This is more so because the tertiary education sector is dominated by government funded universities. Most private universities are small both in terms of enrolment and infrastructure and, hence, funding is restricted from investors. Investors of private universities generally seek low risk free returns. This has made it difficult for private universities directors to expand "whole-heartedly" into long-term risky projects, and seek bigger returns.

Most institutions adjust cash flows for inflation (64 percent, Figure 5, Appendix). Larger institutions (71 percent) see a greater need to adjust cash flows for inflation in comparison to smaller institutions (60 percent). This may be due to the fact that larger institutions have longer cash flow periods as compared to smaller institutions.

Another variable that was not asked of respondents was in regard to taxation. All private universities in South Africa are subject to income tax, but may be exempt in terms of the source of their income. In view of the disparity that may exist, it was decided to omit this question to respondents. However, where taxation may be relevant it would have had impacted on the capital investment decision. It may even have resulted in more capital intensive projects being embarked on by private universities, due to the tax allowances offered by the tax system.

3.5. Main source of income. The main source of income of private institutions is student fees. Smaller institutions get their income from donors (32 percent, Figure 6, Appendix). No private institution receives any income from the government in the form of a subsidy, like public institutions. The fact that most of their funding is derived from student fees, imply a serious lack of funds. The funding, obtained from student fees, is sufficient to meet the operational costs of the institutions.

There is insufficient funds to invest in long-term projects (see Figure 7, Appendix). Combined with the fact that private universities invest in short-term projects (5-6 years), and their rate of returns are lower and less risky than the market risk and return, it seems as though they tend to use excess student fees to invest in these capital projects.

3.6. Long-term funds. Most institutions are able to borrow from banks and other financial houses (71 percent) and their holding companies (52 percent). Smaller institutions are reliant on banks and other financial institutions (73%), whereas larger institutions are able to borrow from their holding companies (78%). Banks and financial houses are willing to lend to private universities since they invest in short-term capital projects and less risky projects. The shorter is the term of the project, the more predictable are the cash flows. In fact, banks are willing to offer loans to private universities as they request smaller amounts for capital investment purposes as can be gauged from the rates of returns and payback period.

Conclusions

The study revealed that more than half of the respondents never used the simpler discounted payback method, instead relying heavily on the more complicated method of internal rate of return and net present value. Further to this, private universities were reluctant to invest in capital projects, and cautiously invested in short-term less risky capital projects. It was not surprising to note that private universities relied solely on student fees, bank loans and donors as their main source of funds, as they received no funding from the government.

This study was limited in that it had not considered the tax benefits of capital investments. South African tax law provides extensive allowances on capital projects, like campus buildings, equipment and vehicles. The tax effect and federal investment allowances on depreciable assets will enable a firm to reduce their company tax liability, even further and in most cases can result in a more favourable position for the firm (Langfield-Smith, Thorne et al., 2009). However, according to my analysis many private universities are not taking advantage of the tax benefits offered by the South African receiver of revenue by investing in capital projects.

One possible reason for this state of affairs is due to the reluctance of the CEO of these universities. Many capital projects last for several years and the benefits may not be realised immediately (McCallum, 2001). However, most CEO's incentives are based on short-term performance (usually within a year) and this is likely to discourage CEO's from embarking on large scale, long-term capital investments.

This study indicated that a single rate of return was used by private universities. The literature indicates that the rate of return should be determined on the basis of each project and not all projects would use the same rate of return. Rates should be determined by the projects in terms of their duration, risk and needs of the business. Many private universities do not embark on long-term projects and, hence, may use the same rate of return on all their short-term capital projects.

This study is useful to prospective foreign countries that wish to invest in private universities in South Africa and other emerging economies. Foreign and local

investors in private universities will need to understand that investments in capital projects in South Africa are risky, especially when considered in terms of the Higher Education Act. Further, any long-term investments "may" be rejected in the future, since the government funded universities have the privilege of funding from the State that encourages and supports capital investments. There is no need for these public universities to source long-term financing and, hence, they are in a position of extreme advantage.

References

1. Barfield, J.T., C.A. Raiborn et al. (1998). Cost accounting. Ohio, South-Western.
2. Burnett, C., R. Smith et al. (1992). The first phase in development of an alternative course costing system, Chartered Institute of Management Accountants Conference, London.
3. Carter, W.K. (1992). To invest in new technology or not? New tools for making the decision, *Journal of Accountancy*.
4. ClickAfrique.com (2006). ClickAfrique takes a look at the ten best performing stock markets on the continent in 2005, 2007, from http://www.clickafrique.com/Magazine/ST014/CP0000000857.aspx.
5. Cropper, P. (1996). Management Accounting Practices in Universities, Management Accounting (CIMA).
6. Drury, C. (2001). Management accounting for business decisions, London, Thompson.
7. Dugdale, D. and C. Drury (1993). Developments in user friendly accounting, Management Accounting (CIMA).
8. Froneman, L. (2002). Private higher educational institutions in a changing South African environment, Acta Commercii 2, pp. 35-44.
9. Garrison, R.H. and E.W. Noreen (2000). Managerial accounting, USA, McGraw Hill.
10. Hansen, D.R. and M.M. Mowen (2000). Management Accounting, Ohio, South Western.
11. Henk, E.O. and C.W. Spoede (1991). Cost accounting: managerial use of accounting data, Boston, PWS-Kent.
12. Hirsch, M.L. (2000). Advanced management accounting, London, Thompson.
13. Horngren, C.T., A. Bhimani et al. (1999). Managment and cost accounting, New Jersey, Prentice Hall.
14. Ingram, R.W., T.L. Albright et al. (2001). Managerial accounting-information for decisions, USA, South-Western.
15. Kruss, G. (2004). Chasing credentials and mobility, Private Higher Education in South Africa, H.R. Council. Pretoria, Governement Press.
16. Langfield-Smith, K., H. Thorne et al. (2009). Management accounting: information for creating and managing value, North Ryde, N.S.W., McGraw-Hill.
17. Levy, D.C. (2002). Commercial private higher education: South Africa as a stark example, *Perspectives in Education*, 20(4), pp. 29-39.
18. Louderback, J.G., J.S. Holmen, et al. (2000). Managerial Accounting, USA, South Western.
19. Naidoo, M. (2006). An analysis of the financial management, cost management, and decision-making systems of private higher education institutions in South Africa from 1990 to 2005, PhD, North West University, South Africa.
20. Mabizela, M. (2002). The evolution of private provision of higher education in South Africa, Perspectives in Education 20(4), pp. 41-51.
21. Macgregor, K. (2008). South Africa: private higher education stabilises, University World News, London, Web Publishing Ltd. May 2008.
22. McCallum, J. (2001). Tough at the top, Business Review Weekly (22 June), pp. 54-59.
23. South Africa (1989). An investigation into of government financing of technikons, Pretoria.
24. Vergnani, L. (2001). Bond University faces government hostility, The Chronicle of Higher Education. London: A51-A53.

Appendix

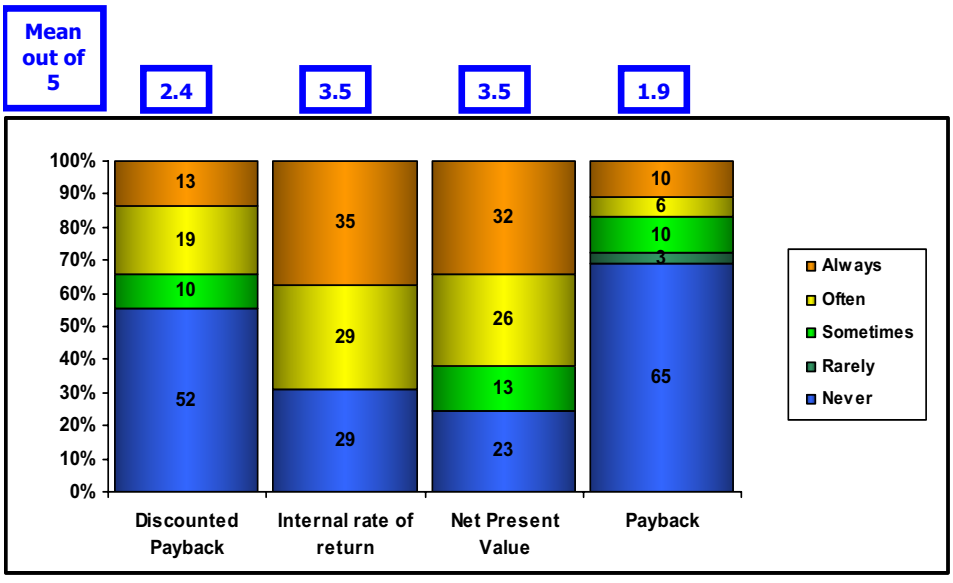


Fig. 2A. Extent to which financial appraisal techniques are used in all institutions

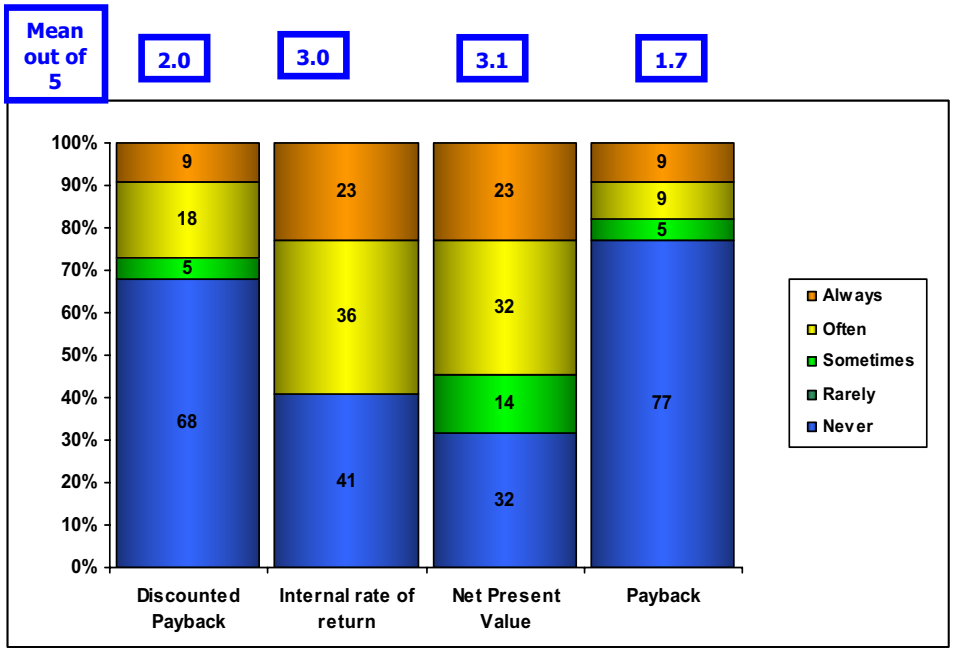


Fig. 2B. Extent to which financial appraisal techniques are used in smaller institutions

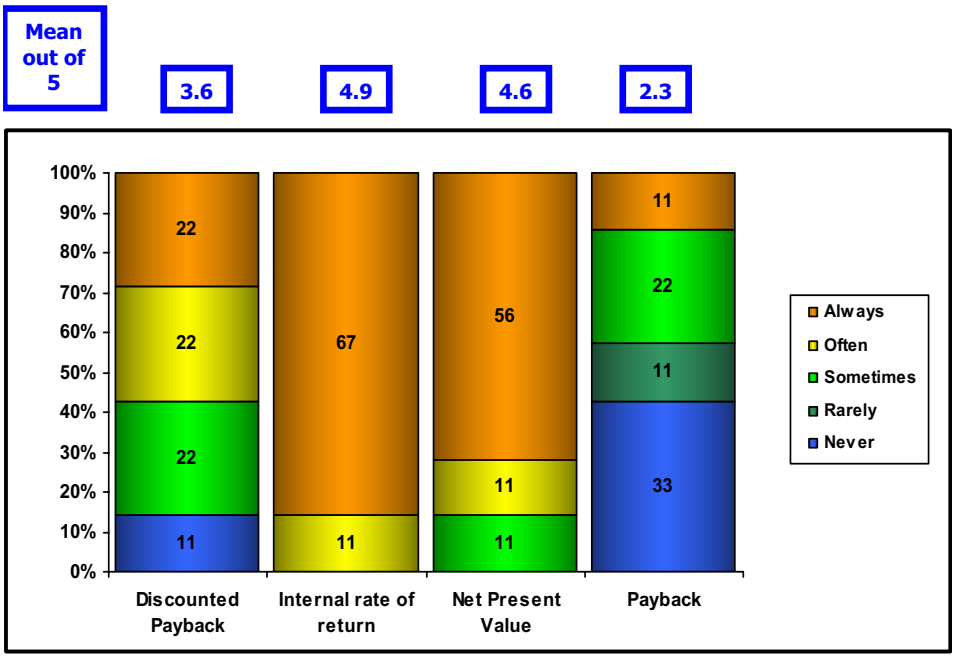


Fig. 2C. Extent to which financial appraisal techniques are used in larger institutions

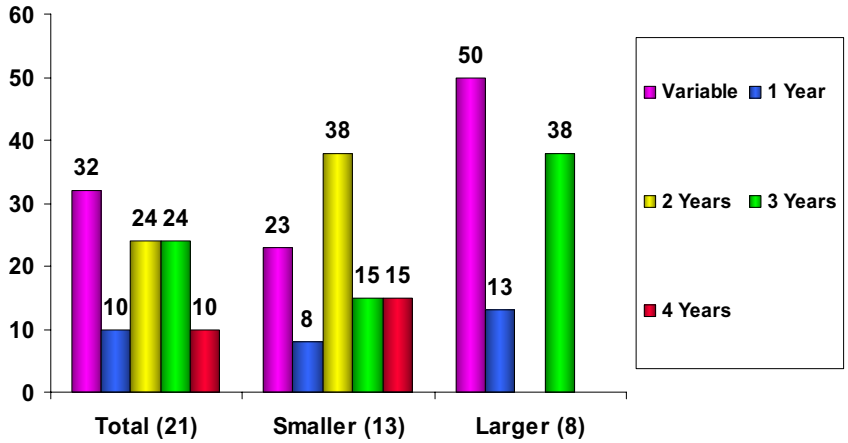


Fig. 3. Payback period used for capital investments

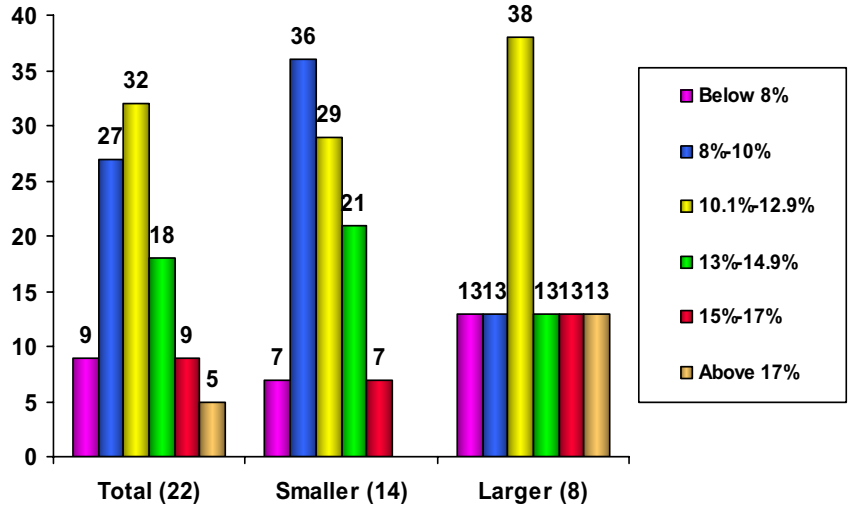


Fig. 4. Minimum rates of returns

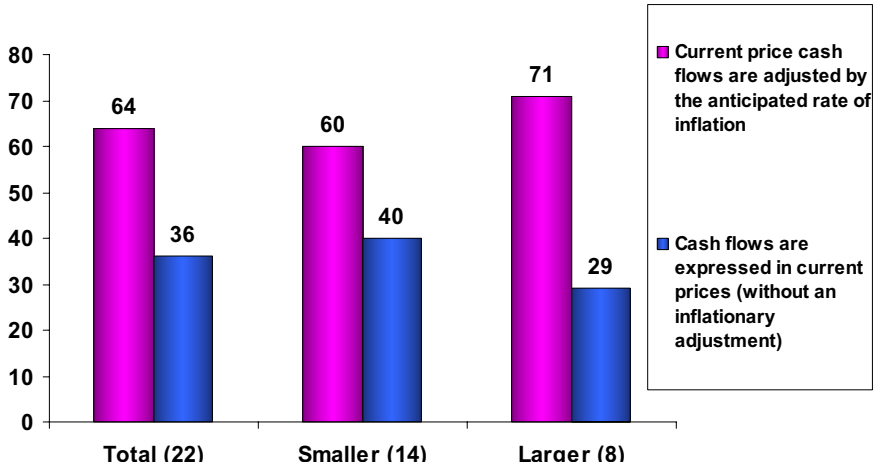


Fig. 5. Taking inflation into account

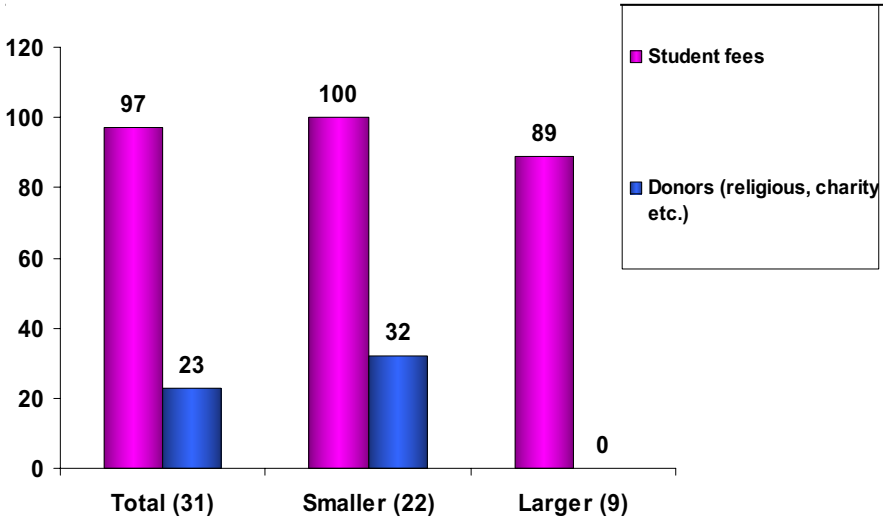


Fig. 6. Main source of income

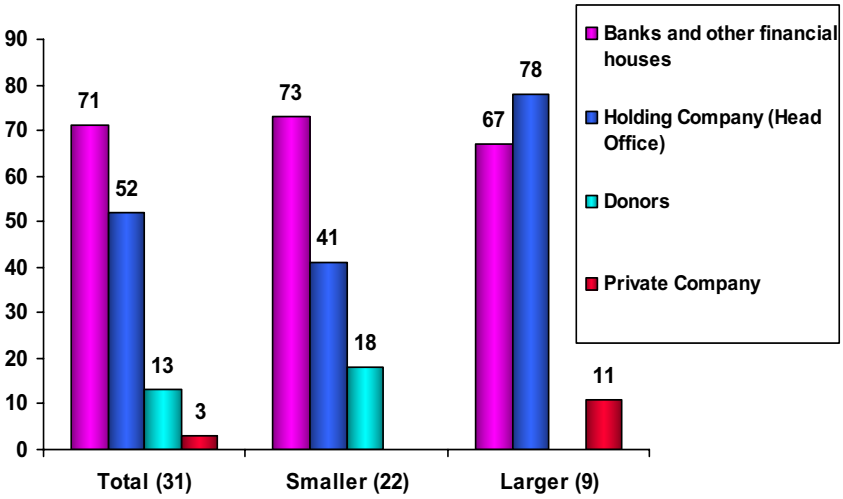


Fig. 7. Borrowing of long-term funds