

## 5. LICENSING MARKET

*In this chapter the licensing market is outlined; the role of licence agreements is sketched; the contents of agreements; and sourcing and valuation of technology are discussed.*

### 5.1 Background

In the licensing market can be found technology which shows particular characteristics and which is receptive to or a candidate for licensing and selling. Such technology has been alluded to in Chapter 2.

Some of the reasons for licensing and selling as well as the influence of the state of companies, their technology strategies and intellectual property policies on licensing and selling actions and licensing strategies *per se* have been discussed in 4.2, p45 and 4.3, p50.

Operational aspects including the how, when, where and who can best be elucidated in the context of the licensing market place. This market forms part of the greater technology market which in turn is part of the total environment within which South African industrial companies have to practise licensing and selling and which is sketched in Chapter 6. The licensing market place is a highly specialised, yet wide ranging, subset of the technology market. The following quotation gives, in an eloquent manner, an inkling of what is involved:

It has been said that the ideal technology management consultant (TMC) possesses a conglomeration of the following attributes: Independence of mind, a broad technical education and background, legal training, market research and technical research experience, a knowledge of patents, trademarks and copyrights, an understanding of what constitutes valuable trade secrets and know-how combined with an ability to "package" such information effectively, knowledge of financial tools to value technologies and the companies that own them, an understanding of the different forms of technology transfer agreements, the ability to get along with people, salesmanship, negotiating experience and enjoyment of the process, public speaking ability, foreign language abilities, an appreciation of different cultures, a bent toward scholarship and the habit of omnivorous reading, physical stamina, resistance to jet lag, the ability to hold one's liquor, an appreciation of the importance of discretion including the necessity of keeping one's mouth shut at certain times. This list is not exhaustive. It should be readily apparent, however, that no-one possesses all of the foregoing attributes to a high degree. This does not detract from the pertinence of the listing. (Goldscheider, 1990: 77.)

Goldscheider is an esteemed practising technology transfer consultant and it can be assumed that his concept of a TMC is biased towards technology transfer and licensing. It can thus be said that he is listing the attributes necessary to license and sell technology effectively. And the list is indicative of the various aspects and intricacy of the licensing market place. The TMC can be seen as representing the functionaries in the licensing market place, who are identifying proprietary technology and its sources, needs and their whereabouts and matching them through suitable arrangements and agreements, all the while accommodating a host of influences to which Goldscheider points.

Although the market as a concept and structure is important and intricate, success therein is ultimately dependent on the influence of the functionaries involved, as Teece concludes after discussing, in the context of profiting from technological innovation, the implications for integration, collaboration, licensing and public policy. He says that the product life cycle model of international trade can be expected to play itself out differently in different industries and markets, influenced by appropriability regimes and the nature of the assets required for successfully commercialising a technology and adds:

Whatever its limitations, the approach establishes that it is not so much the structure of markets but the structure of firms, particularly the scope of their boundaries, coupled with national policies with respect to the development of complementary assets, which determines the distribution of the profits amongst innovators and imitators/followers. (Teece, 1996: 250.)

Properly executed, the licensing process should influence its environment positively. To this end, extensive methodology encompassing several instruments and techniques has been developed.

The main dimensions of the process, which is complex and non-linear, include the following:

- (i) Identification of licensable technology, within company and elsewhere; and reason.
- (ii) Protection of technology to be out-licensed.
- (iii) Identification of potential licensees.
- (iv) Promotion of offered technology.
- (v) Evaluation of technology: technically, legally and commercially.
- (vi) Negotiation.
- (vii) Agreement conclusion.

(viii) Agreement execution.

These dimensions point to the wide-ranging supporting facilities and skills involved. These include managerial, administrative, scientific, technical, financial, economic, legal, marketing and psychological elements as listed by Goldscheider.

A taxonomy of the licensing market place could encompass all the dimensions that will be referred to in Chapter 6 (economic ethos, accountancy and finance, regulatory and enabling environment, sociological aspects, availability and management of information and the problems of futurology), as well as characteristics associated with sources and their identification, licensors, licensees, brokers, the technology itself including its maturity and valuation and cost, the mode of transfer, transactional difficulties including recognition, disclosure, agreements and whether it is free, monopolistic or oligopolistic.

## **5.2 Agreements**

### 5.2.1 Qualitative aspects

Once the parties to a licensing transaction have successfully finalised their negotiations they have reached agreement. It is customary practice to reduce the agreement to writing to serve as *aide memoire* and to ensure legal certainty. This document is variously called a contract or an agreement. The latter term is used henceforth.

Examples of agreements that can involve licensing are:

Agency agreements.

Distributorship agreements.

Assembly agreements.

Joint venture agreements.

Know-how and/or patent licence agreements.

Trade mark agreements.

Franchise agreements.

Combinations of the above and other variants.

Agreements between parent and subsidiary companies.

Either independently or as part of a more encompassing agreement, a licensing agreement should come into being after at least the aspects listed below have been considered, that is to say an aspect does not have to be written into the agreement if irrelevant, but should have received considered attention. It is highly unlikely that the scope, composition and ingredients of two agreements will be the same. Some of the aspects are more important than others. They can be viewed as deal-makers or deal-breakers as opposed to what can be viewed as hygienic aspects. In the first category are scope of technology and royalty rate and in the second category force majeure and communication. Some aspects are discussed to some varying extent in 5.2.2 and correspondingly surveyed. None are discussed exhaustively as that is not the purpose of this study. Aspects marked with an asterisk receive no further attention at all.

\* Parties to the agreement.

\* Preamble - explaining the background and basic reasons for the agreement.

\* Definitions - of terms used.

Grant - making clear what rights are granted including territorially; exclusivity.

\* Sub-licensing - not permitted or how permitted.

\* Conversion to non-exclusivity - conditions under which this may be done.

Consideration - all amounts payable and timing.

Minimum royalties - as licensor guarantee and licensee stimulus.

Minimum performance - as licensor guarantee and licensee stimulus.

Payment arrangements - how.

\* Accounting requirements - what, when.

Transfer of know-how – what, how, when, cost treatment.

Improvements - access of licensee and licensor to other's, including grantback.

Undertakings by licensee - meet market demand, inform of improvements, restrictions, grant back own inventions, purchase from source.

Undertakings by licensor - transfer, maintain patent, inform of improvements.

Confidentiality and secrecy.

Infringements/litigation - of subject technology: how handled, by who, cost.

\* Patent rights of third parties - licensee shall not infringe/shall be responsible.

Respect for patent rights - not attack licensor's.

Quality requirements - licensee's behaviour.

\* Trade marks - governing use.

\* Duration of agreement.

- \* Termination of agreement - who, why, when.
- \* Consequences of termination.
- \* Disclaimers.
- \* Liability for injury from visits - either party.
- \* Maintenance of patents - who responsible, cost, what if unsuccessful.
- \* Warranty - licensor not responsible for licensee's consequential damages.
- \* Licensee not agent.
- \* Force majeure.
- \* Amendment of agreement scope.
- \* Severability and partial validity of agreement clauses.
- \* Waiver of breach of term.
- \* Assignment of rights and responsibilities of either party – whether and how.
- \* Applicable law.
- \* Language to prevail.
- \* Communication.
- \* Arbitration/mediation.

#### 5.2.2 Quantitative aspects

The content of licence agreements is generally confidential as Ishii and Fujino (1994) point out. However, a survey by them through the Institute of Intellectual Property (IIP) of Japan by mailing 200 members of the Japanese chapter of the Licensing Executives Society resulted in a 33% response which was followed up with interviews and yielded a wealth of interesting pointers regarding the content of arms-length licence agreements involving Japan.

Respondents were from the following industries: transportation machinery, 12; pharmaceutical, 11; chemical, 9, electrical/electronic, 7; precision machinery, 6; plastics, 5; non-metal, 5; general machinery, 5; electrical machinery, 5. In- and out-licences were involved and it can reasonably be assumed that several different foreign countries were involved, although licensee foreign countries may perhaps be skewed towards less developed ones; and licensor foreign countries towards fully developed ones.

Table 8 shows noteworthy balance between in- and out-licences and domestic and foreign licences.

	Japanese	Foreign	Total
Out-licences	53	51	104
In-licences	54	53	107
Total	107	104	211

**Table 8. Overall number and type of agreements.**  
(Ishii and Fujino, 1994: 131)

Percentage-based royalties is predominantly used as is clear from Tables 9 and 10. The writers further report that it was increasing. Per quantity based royalties are more particularly used in the case of software packages.

Licence content	Net sales % (%)	Per quantity (%)
Patent only	66	34
Know-how inclusive	69	31

**Table 9. Relative use of percentage and quantity based royalties.**  
(Ibid.)

Royalty base	Very frequently	Frequently	Normal	Not frequently	Never	Weight (%) *
Likert point value	10	7	5	2	0	
<b>Patent only</b>						
Sales amount x royalty rate	5	9	17	51	24	25,2
Net sales x royalty rate	58	25	16	8	4	69,4
Profit x royalty rate	0	0	2	22	74	5,4
<b>Total</b>	<b>63</b>	<b>34</b>	<b>35</b>	<b>81</b>	<b>102</b>	<b>100,0</b>
<b>Know-how inclusive</b>						
Sales amount x royalty rate	5	7	17	50	22	24,2
Net sales x royalty rate	56	25	18	6	4	71,2
Profit x royalty rate	0	0	2	22	71	5,0
<b>Total</b>	<b>61</b>	<b>32</b>	<b>37</b>	<b>78</b>	<b>97</b>	<b>100,0</b>

**Table 10. Royalty base**

(Ibid: 133)

\* Calculated from weighted points.

Degnan and Horton (see 4.3.2 – p57 for background) reported similar results using a Likert scale with 1 = never use and 5 = frequently use.

Royalty base	Use (% - rounded)
Net revenues x royalty rate	39
Fixed amount per unit	26
Gross revenues x royalty rate	21
Gros or net profit percentage	17
Fixed period amount	16

**Table 11. Royalty base**

(Degnan and Horton, 1997: 94)

Net sales is predominant as royalty base. This is the result of net sales being a fair measure of actual sales income and the applied percentage not being adjustable. Sales as such may include eventual returns and other revenues and profit can be manipulated.

The frequency of use of initial royalties and minimum royalties was also probed. Table 12 shows the mean values of total points scored from the Likert scale "use always" = 100 points, "use occasionally" = 50 points and "scarcely use" = 0 points. The greater commitment required from licensors and possibly the greater maturity of the technology involved in know-how licences lead to increased initial payments.

Royalty type	Patent licence only	Know-how inclusive licence
Initial	49,2	66,9
Minimum	34,2	32,4

**Table 12. Frequency of use of initial and minimum royalties.**

(Ishii and Fujino 1994: 131)

Degnan and Horton again found similar results, using a Likert scale with 1 = never use and 5 = frequently use.

Payment type	Use (% - rounded)
Mixture of methods	41
Up front fees	32
Running royalty only	28

Minimum annual payments	25
Lump sum payment only	22

**Table 13. Type of royalty used.**  
(Ibid: 93)

Both surveys investigated the licence factors influencing royalty rates. (See Tables 22 and 23, pp78/79 for valuation of intrinsic value.)

Factors	Number of respondents	
	Patent only	Know-how inclusive
Exclusivity	57	51
Scope of licence	46	45
Licensed products	46	44
Licence period	38	44
Territory	37	43
Maturity of patent and know-how	29	41
Credibility of licensee	15	16
Bargaining power	16	15
Shared responsibility against third party infringement	14	11

**Table 14. Factors affecting royalty rates.**  
(Ishii and Fujino, 1994: 133)

Exclusivity assumes central position. Maturity of know-how is important as well.

Degnan and Horton found the following, with Likert scale 1 = not important and 5 = very important. Their factors were deliberately chosen to parallel the factors being used in the US Federal Courts to determine appropriate royalty rates in patent infringement cases.

Factors	In-licence (%)	Out-licence (%)
Nature of the protection	43	42
Utility over old methods	42	42
Scope of exclusivity	41	41
Licensee's anticipated profits	30	34
Commercial success	37	37
Territorial restrictions	37	35
Comparable licence rates	36	37
Duration of protection	33	31
Licensor's anticipated profits	26	31
Commercial relationship	26	26
Tag along sales	21	21



**Table 15. Factors affecting royalty rates.**  
(Degnan and Horton, 1997: 92)

A direct comparison with Ishii and Fujino is not possible. The importance of the nature of protection is possibly due to the possibility of USA licensees being entitled to attack their licensor's licensed patent. "Nature of protection" and "utility" possibly also overlap to some extent Ishii and Fujino's "scope" and "licensed products".

The relative importance of terms and conditions was also probed. Longer term gain and learning goals are obvious from the importance placed on improvement provisions. It is not surprising that confidentiality is most important in the case of know-how. The non-contest clause could lead to anti-trust problems in the USA and Europe.

Major licence terms	Number of respondents	
	Patent only	Know-how incl.
Provisions on improvements	42	45
Confidentiality, non-misappropriation	38	56
Warranty of patent validity	30	27
Non-contest clause	25	14
Provision of service	16	36
Warranty of quality of achievements	8	20
Obligation to purchase materials	4	7

**Table 16. Relative importance of terms and conditions.**  
(Ishii and Fujino, 1994: 133)

From Table 17 greater awareness of the possible consequences of a non-contest clause is apparent. Confidentiality is again highly rated. "Administrative" aspects seem most important, albeit marginally.

Major licence terms	Respondents (% - rounded)
Governing law	93
Accounting and reporting	92
Confidentiality	90
Assignability	88
Dispute resolution	84
Warranty of ownership	80
Infringement enforcement	78
Provision for improvements	75
Warranty of non-infringement	45
Non-contest clause	20

**Table 17. Relative importance of terms and conditions.**

(Degnan and Horton, 1997: 93)

Outright or overt restrictions on licensees run the risk of anti-trust illegality or the illegal expansion of patent and similar monopolies and in some cases will render an agreement null and void *ab initio*. It is nevertheless interesting to note in which respects licensors were considering either restrictions or limited grants of rights, from a survey of 39 USA firms in 1977 by Contractor.

Restriction	Responding licensor firms (%)
Territorial limitation on manufacture	82,4
Limitations on licensees export quantity	14,7
Limitations on licensees export price	5,9
Export only through designated agent	23,5
Prohibition on handling competitors' products	23,5
Materials to be purchased from licensor or designated agent	11,8
Grantbacks from licensees	70,6
Quality controls on materials	29,4
Quality controls on finished products	55,9

**Table 18. Summary data: Restrictions sought in agreements.**

(Contractor, 1981: 61)

Survey objectives. (Results are presented in 8.15.)

It was decided to establish the prevalence of licences, technology or IP content of licences, bases on which royalties are calculated, royalty and payment types used, relative influence of licence terms and conditions on remuneration rates, desirability of restrictions and relative importance of some licence terms and conditions.

### 5.3 Sources of technology

A taxonomy of sources of technology could include companies of all sizes and ages, independent research laboratories, universities, inventors, and government agencies and laboratories.

Companies and inventors could be the would-be licensor itself, in the case of licensing out.

In a different dimension, another taxonomy is depicted in Table 19 (*ca* 1995).

Knowledge source	Your country	Other Europe	North America	Japan
Affiliated firms	48,9	42,9	48,2	33,6
Joint ventures	36,6	35,0	39,7	29,4
Independent suppliers	45,7	40,3	30,8	24,1
Independent customers	51,2	42,2	34,8	27,5
Public research	51,1	26,3	28,3	12,9
Reverse engineering	45,3	45,9	40,0	40,0

**Table 19. Outside sources of technical knowledge for large European firms: percentage judging the source as very important.**

(Tidd *et al*, 1997: 83)

Tidd draws attention to the importance European firms attach to foreign sources of technology. It was reported that European firms experience difficulty in learning from Japan, probably because of greater physical, linguistic and cultural distances.

A taxonomy of technology source media could include exhibitions, fairs, symposia and conferences, data banks, written and electronic publications including patents, trade and professional journals, contact/broadcast offices of developers, documents specifically offering an opportunity, editors, especially of trade and scientific journals, trade associations.

The electronic information age is enhancing and accelerating the total process. Tidd sets out the advantages and disadvantages of some media:

Nature of information	Some sources	Strengths	Limits
Corporate R&D expenditures.	Annual reports. Business Week, June. Company reports Ltd, June.	Easy access.	No detail of projects. Misses innovative activities outside R&D.
Corporate patents and scientific publications.	US Patent Office. European Patent Office. Other patent offices. Consultants (CHI, Derwent).	Comparisons possible in great detail. Identifies possible entrants as well as incumbents.	Choosing relevant patent classes. Dealing with firms with several names. Non-patented innovations.
Public announce-	Conferences. Media.	Direct and detailed signal of corporate	Distortion for financial or marketing

ments and press analysis.	Trade press.	intentions.	reasons.
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**Table 20. Public information sources on corporate innovative activities.**  
(Tidd *et al.*: 1997: 88)

An important indirect source and marketing channel is the multiplicity of agents or brokers assisting in matching would-be licensors and licensees and often playing an invaluable role in licensing-environment making. These may be specialists in licensing or even in a particular field of technology, may exist in firms of patent attorneys or be part of companies or universities. Several extend help specifically to so-called private inventors who lack the resources and know-how to develop and exploit their inventions optimally while some are state-owned. See also Goldscheider and description of Technology Management Consultants in 5.1, p65.

The basic deal we offer is one where BTG USA acts as principal, not advisor. We take assignment of the technology or an exclusive license. We have the job of developing and implementing a technology marketing plan, identifying licensees and entering into licenses. We share revenue net of certain defined costs. We do not charge fees for our executive time, either up front or as a later cost. The university-based business has been and is a continuing success. About four years ago BTG decided to offer its services to companies. We created a new division called Intercompany Licensing to do this. This activity was the major focus of BTG USA when it was set up two years ago. .... now actively marketing technology from large corporations such as American Cyanamid, Campbell Soup, Johnson & Johnson and Grumman Corporation as well as from many smaller companies. (Schafer, 1993: 119.)

BTG USA was founded to mirror BTG UK which had evolved from the National Research Development Corporation which was founded in the 1960s. The South African equivalent then was the South African Inventions Development Corporation and now is Technifin (Pty) Ltd.

Note the big companies that have entrusted at least part of their technology available for licensing to BTG.

The intercession of people is ineluctable and Tidd quotes Levin, Klevorick, Nelson and Winter from the Brookings Papers on Economic Activity, *ca.* 1987, as shown in Table 21.

Tidd points out that learning does not come cheaply - the three top methods are the most expensive. It is also noteworthy that licensing is considered 96% and 92% as important as the top method, for respectively processes and products.

Method of learning	Overall sample means *	
	Processes	Products
Independent R&D	4,76	5,00
Reverse engineering	4,07	4,83
Licensing	4,58	4,62
Hiring employees from innovating firm	4,02	4,08
Publications of open technical meetings	4,07	4,07
Patent disclosures	3,88	4,01
Consultations with employees of the innovating firm	3,64	3,64

**Table 21. Effectiveness of learning in large US corporations.**  
(Tidd *et al*, 1997: 92)

\* Range: 1 = not at all effective; 7 = very effective.

Bigger companies often refuse submissions without a waiver of confidentiality from the would-be licensor. Although this is irritating to the licensor it is perfectly understandable against the bigger companies' experience that unsolicited offers seldom are worthwhile and the risk of being sued for misappropriation of the licensor's technology.

Survey objectives. (Results are presented in 8.17.)

It was decided to establish the frequency of occurrence of sources of technology in general and of occurrence of sources of in-licensable technology.

#### 5.4 Cost and valuation

Much has been written about the intrinsic valuation of technology involved in licence agreements, including the following wry comment:

Trying to explain the factors that go into the valuation of an invention or technology only convinces people that licensing is three parts witchcraft and one part common sense. Inventors and top management

want to know what their technology is worth to their organizations. Prospective patent licensees want to know what to pay for such technology. Licensing executives understand that the answer to these questions, from both sides, is that it depends. (Degnan and Horton, 1997: 91.)

Tables 14 and 15, p72 list some licensing factors that influence royalties.

The IIP and the Degnan and Horton (D&H) surveys (see respectively 5.2.2 - p69 and 4.3.2 – p54, also for the profile of respondent companies) provided some interesting insights regarding the final outcome of valuation and negotiation.

As D&H point out, there are many factors determining a running royalty for a willing licensee and a willing licensor including the development status of the technology, its ingeniousness and commercial success, its profitability and the ease of designing around any patent.

They asked their respondents "Does your organization license-in technologies that are not completely developed?" 10% said never, 52% said sometimes and 37% said frequently. They were then asked what discount they would apply to technologies still in the pipeline and a further three defined three phases. An immaturity discount would render a running royalty as shown in Table 22.

<b>Maturity of patented technology</b>	<b>Relative royalty rate</b>
Fully developed.	10
Pilot or prototype phase. Prototype has been tested and product test marketed. Regulatory approvals being sought.	8,0
Detailed design phase. Engineering designs completed and protection applied for.	6,5
Lab phase. Research is completed and concept has been reduced to practice.	5.0

**Table 22. Discount of royalty from fully developed technology rate.**  
(Degnan and Horton, 1997: 94)

D&H tested for the effect of innovativeness defining an innovativeness scale as follows:

Revolutionary: Satisfies a long felt need or creates a whole new industry.

Major improvement: Significantly enhances quality or product superiority in an existing product, process or service.

Minor improvement: Creates an incremental improvement in an existing product, process or service.

Respondents were then asked to list the range of running royalties they licensed in or out during the previous year: from a low x% through a high y% against each of the three categories of the innovativeness scale provided. In Table 23 the 7 in "revolutionary/ low" is the average of x while 5 is its median.

Technology type	Licensing in				Licensing out			
	Average (%)		Median (%)		Average (%)		Median (%)	
	Low	High	Low	High	Low	High	Low	High
Revolutionary	7	13	5	10	7	14	5	10
Major improvement	4	8	3	7	5	9	4	8
Minor improvement	2	5	1	4	3	6	2	5

**Table 23. Average and median running royalties.**  
(Degnan and Horton, 1997: 94/5)

A considerable gap exists between the lowest and highest royalty rates. D&H report that this is partly due to the fact that pharmaceuticals populate the high end and systems involving several patents the lower end.

Royalty rate (%)	1	2	3	4	5	6/7	8/more
Respondents	23	18	46	32	22	11	18

**Table 24. Favoured royalty rates.**  
(Ishii and Fujino, 1994: 133)

D&H also asked for information regarding the financial measures organisations used in determining appropriate royalties - as starting points for negotiations, to determine a range or to fine-tune final figures.

Financial measure	In-licensing (%)	Out-licensing (%)
Discounted cash flow	56	49
Profit sharing analysis	52	54
Return on assets	38	27
"25% rule" as starting point	24	30
Capital asset pricing model	11	10
Excess return analysis	8	7

**Table 25. Financial measures used to determine appropriate royalties.**  
(Degnan and Horton, 1997: 92)

The first two, which are perhaps routinely used in investment evaluation decisions, may be preferred because information is more readily available. The 25% rule which assigns 25% of net profit from exploitation to the licensor, may be attractive for smaller, less sophisticated organisations. The last two methods may be too sophisticated and difficult to present to the other side.

Contractor (1981) points out that a technology transfer is properly viewed as a relationship over time. He further reports that he found a standard accounting format for suppliers is possible despite an infinite diversity of products and processes transferred and despite agreements being tailored to suit specific circumstances. The format showing returns and costs that have to be taken into account appears in Table 26.

Note that Contractor includes also the following costs in his listing: Total of sunk or developmental cost for the product or process transferred, up to inception of agreement; and opportunity cost, for example losing export sales or direct investment opportunities in licensee's country or other territories.

Returns to supplier in year <i>t</i>	Cost incurred by supplier firm in year <i>t</i>
Front-end or lump sum fees.	Technical services (direct and overhead).
Royalties.	Legal cost (direct and overhead).
Technical assistance fees.	Marketing assistance to recipient.
Fees for other specific services.	Travel and management personnel cost not include above.
Payment in equity of recipient plus dividend thereon.	Other direct cost.
Net margins and commissions on materials or goods supplied or received.	
Value of grantbacks.	
Tax savings.	

**Table 26. Cost and return categories for supplier firms over life of an agreement.**  
(Contractor, 1981: 35)

He also presents a useful construct of the remuneration relationship between licensor and



licensee (Fig. 13).

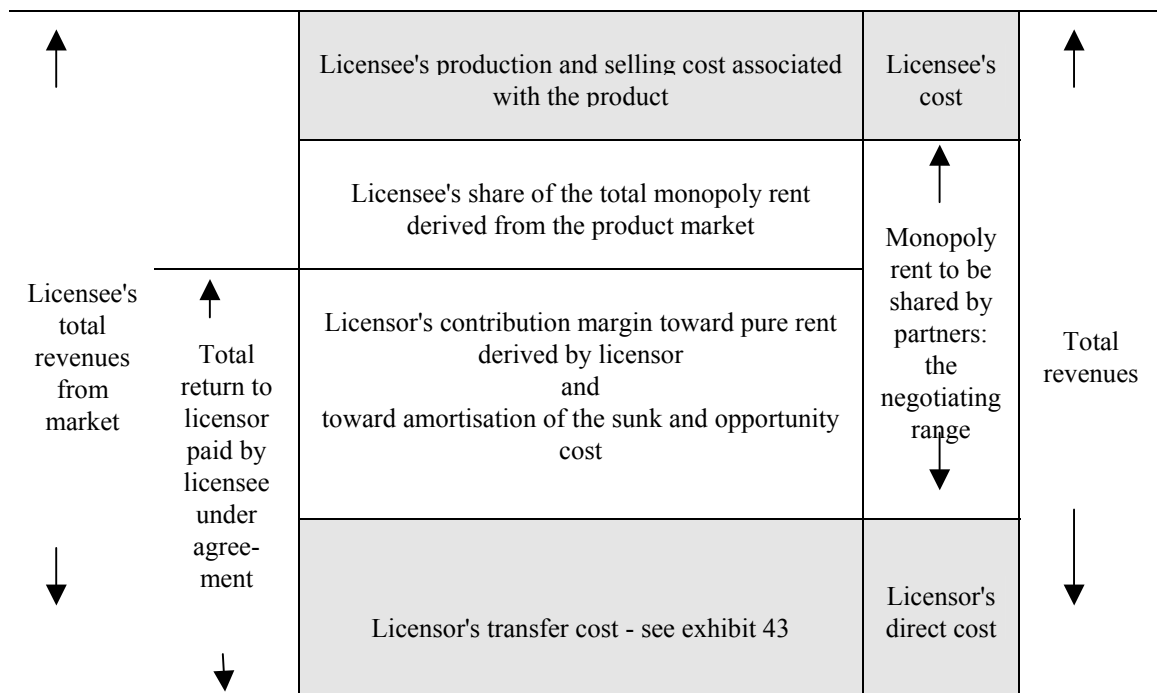


Figure 13. Allocation of licensee's revenues from sales of licensed product. (Ibid: 41)

Contractor normatively argues that the following factors influence the bargaining process.

Agreement-specific factors	Contextual factors
Territorial coverage and exportability of product.	Licensee's government's intervention.
Exclusivity of the licence.	Extent of competition in the product market in licensee's market.
The life of the agreement.	Extent of competition among international suppliers of same or similar technology.
The life of the patent.	Political and business risk in licensee nation.
Trademark rights.	Product and industry licensing norms.
Commercial age of the technology.	
Adaptation of the technology for the licensee.	
The relative scale of licensee's plant.	
Grantback provisions.	
Tie-in provisions.	

**Table 27. Factors affecting licence agreement bargaining process - normative.**  
(Ibid: 46/7)

Contractor subsequently tested which considerations were actually used to set prices or returns of agreements. The most important criterion could have been viewed by respondents as more encompassing than it was possibly intended but its deemed importance certainly draws attention to the sensitivity of licensors to out of pocket and transaction cost and dilution of appropriability.

Criteria (offered at random in questionnaire)	Score	Rank
Depends on amount of technical and other services provided to licensee.	127	1
Industry norms e.g. royalty %.	105	2
Licensee's market size and profitability.	102	3
Take what's available.	61	4
R&D expenditure	50	5
Returns must at least equal those from exporting or direct investment.	28	6
Less for old or obsolescent technology.	27	7
Less when patent expiring.	10	8
Other: patent coverage, grantbacks.	8	9

**Table 28. Criteria affecting licence agreement bargaining process - actual.**  
(Ibid: 46/7)

The combined importance of the first three criteria seems to indicate that complicated calculations regarding the instant capital value of the technology were not regarded seriously. Nothing to indicate use thereof was mentioned under "other" either. The significant drop in frequency to criterion 4 almost renders the other criteria also rans and reinforces the impression that the accounting calculations involved tended to be rather coarse and perhaps of the "feel right" type. That the approach was pragmatic is also clear from in-depth interviews with 12 of the respondent firms from which Contractor determined that research and development costs are almost always regarded as sunk. The major reasons seemed to be the difficulty of calculation and the mooted impossibility of allocation to individual agreements. Sometimes these costs, which it can be argued will be saved by the licensee, are estimated for the licensee merely as an aid in negotiation.

Opportunity cost could be discounted to some extent in the top criterion. On the other hand the "opportunity" involves much more than immediate money. Would-be licensors would presumably consider their options carefully, taking cognisance of the strategic factors mentioned in Chapters 3 and 4 above, before attempting licensing.

Considering only costs in Table 26, p80 and factors in Table 27, p81, bearing in mind that this list can be extended and each factor can also be dissected in turn and should be viewed from licensor and licensee perspectives; as well as the extended periods of time usually attendant on licence agreements, it becomes clear that any *de rigueur* attempt to calculate a royalty rate must be viewed with healthy scepticism. There are simply too many economic, legal and technology unknowns requiring assumptions, and variables. However, this does not rule out the necessity and wisdom of acquiring a sound understanding of the arena nor the involvement of accountants. Licensees will certainly develop *pro forma* statements assessing a licence opportunity and licensors should also attempt to do so even if their knowledge of the licensee and its markets is imperfect. In this manner a starting range of remuneration can at least be developed and the numbers understood in context.

Contractor concludes that licensors' behaviour is satisficing rather than revenue maximising. Both parties to an agreement must be satisfied with the transaction, otherwise its viability is seriously questionable.

Survey objectives. (Results are presented in 8.16.)

It was decided to establish methods used to calculate royalties, maturity or obsolescence discounts and the relative value placed on patents, trademarks and know-how.

### **5.5 Licensing organisation and functionaries**

From the descriptions of a Technology Management Consultant and the licensing process in 5.1, p65 above an idea can be formed of the aspects that need to be considered when licensing manpower is deployed.

In a survey in 1992 of 1800 major Japanese firms in all industries except for financial institutions, with a response rate of 26,5%, the following was found:

<b>Functional department responsible</b>	<b>%</b>
Research and development	39,8
Special patent department	26,0
Administrative	9,4

Special intellectual property department	9,2
Legal department	8,1
Other	7,4

**Table 29. Responsibility for intellectual property.**  
(Murakami and Nakata, 1994:128)

The diverse nature of the intellectual property function is also underlined by the fact that patent attorneys and solicitors made up only 3,8% of the total manpower devoted to this function (fraction 0,54/14,19 in Table 30):

	3 years ago	Current	3 years from now
Total personnel (average)	11,30	14,19	15,78
Total personnel (largest)	300	360	400
Lawyers and patent solicitors (average)	0,48	0,54	0,83
Lawyers and patent solicitors (largest)	15	20	25

**Table 30. Manpower devoted to intellectual property.**  
(Murakami and Nakata, 1994:128)

The authors note that the patent solicitor's examination in Japan is extremely demanding and concentrates only on the patent application process while companies do not afford such people special treatment.

The number of departments involved in the negotiation, evaluation and approval of technology transfers was also established by Degnan and Horton (1997 - see 4.3.2, p57 for the nature of the respondents).

Department type	Respondents reporting use (%)
Legal and regulatory	70
Research	60
Licensing	59
Technical and engineering	55
Sales and marketing	50
Finance and accounting	38
Manufacturing and production	29

**Table 31. Departments involved in licensing process.**  
(Degnan and Horton, 1997: 92)

operating executive; or one or more regional executives who regularly employ licensing or a technical executive in charge of contractual obligations or anti-trust aspects.

Internally, a licensing department or function should have available or have access to (and this is the Head's responsibility):

(i) All required functional and licensing-technical skills such as negotiation, contract administration, agreement execution, legal and marketing skills. These can reside in permanent teams or *ad hoc* teams.

(ii) Regional differences should be managed, perhaps by assigning permanent staff to regions. The whole function can be decentralised on this basis or initial strategy and negotiation can be left to the field while administration, litigation and inward licensing are done by a corporate office.

(iii) Goldscheider points out that emphasis on the needs of product divisions may prompt the appointment of managers from product divisions to attend to licensing.

In late 1996 Boeing acquired the defence portion of Rockwell International Corporation, followed eight months later by Boeing's merger with McDonnell Douglas Corporation. The company was re-organised into three main operating groups: a Commercial Airplane Group (CAG), an Information, Space and Defence System Group (ISDS) and a Shared Services Group. The licensing activities of the new organisation with about 220 000 employees, up from 120 000, had to be integrated.

Extensive studies and benchmarking with 12 other Fortune 500 companies regarding especially the centralisation of licensing resulted in the insight that the centralisation issue included both an activity element and an authority element. The former concerned finding technology and partners and negotiations and contracting. The latter concerned technology release. The benchmarking study discovered that activity and approval could both be centralised, could both be decentralised or could be found decentralised or centralised - all possible combinations existed in practice and worked well.

Boeing decided on two separate licensing groups, one each for CAG and ISDS. (Sproule, 1998.)

Survey objectives. (Results are presented in 8.13.)

It was decided to establish the frequency of occurrence of a specialised licensing function, South African manufacturing companies' own view of their technology trading prowess, their like/dislike of licensing, methods used to identify potential licensees, departments or functions involved in the licensing process including evaluation, agreement negotiation, agreement compilation, contract administration and how licensees are approached.