

*Full Length Research Paper*

# **A case study of factors influencing employment satisfaction in a Thai life sciences research institute**

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The objective of this study was to find the level of employment satisfaction in a life sciences research institute staffed by a mix of academic and non-academic staff. Both academic and non-academic staff members were included in the survey. The study population comprised 121 employees at the Institute of Science and Technology for Research and Development, Mahidol University. The instrument for gathering data was in the form of a questionnaire consisting of 27 questions as well as 5 basic demographic questions determining sex, age, level of education, rate of salary and working duration. Employment satisfaction was measured on a five point scale in terms of career progression, employment stability, job characteristic, relationship with colleagues, relationship to immediate supervisor and the physical work environment. Data were analyzed in both univariate and multivariate analyses. From the 121 questionnaires given out, 105 completed questionnaires were returned (86.78%). The majorities of the study population were females, and aged between 31 - 40 years old. In terms of education, the majority of respondents had a Bachelor's degree, earned between 10,001 - 20,000 Baht and had been employed for between 11 and 20 years. Overall, it was determined that the level of satisfaction was moderate, since the relationship with colleagues showed the highest level of satisfaction and career progression showed the lowest. In particular, longer serving staff members were more likely to feel that they were underserved in the provision of short, professional training sources. This is the first analysis of staff from a research institute in a developing country. Although, relatively simple in format, it may have application in other developing and under-developed countries as a quick and simple screening tool to determine the well being of the employees in research institutes.

**Key words:** Biotechnology, questionnaire, support staff, research, Thailand.

## **INTRODUCTION**

In Thailand, as with many other countries, spending on research and development is seen as an essential component of national development, and in particular, expenditure in the biotechnology/life sciences area is seen as critical to long term development (Svasti, 2001). Thailand previously spent approximately 0.25% of its GDP (ranged from 0.24 - 0.26% between 2001 and 2006), but this has dropped recently to 0.21% in 2007 (Taharnklaew, 2010), a figure significantly lower than

other nations (Liefner and Schiller, 2008), and funding for R and D is passed through a number of governmental departments and organizations. Much of this money is spent in funding research undertaken either directly at university departments or at research institutions associated with universities (Numprasertchai and Igel, 2005).

The development of human resources within Thailand is seen as critical to achieving appropriate progress in scientific fields, and a number of programs are in place to develop scientific and technological talent, such as the Royal Golden Jubilee Fund of Thailand which was established in 1996 with an aim to produce some 25,000 scientifically and technologically qualified PhDs within 25 years (<http://rgj.trf.or.th/thai/rgj11.asp>; accessed 27/03/

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2010, translated from Thai).

As with many research institutes around the world, the institutes in Thailand are the place of employment for people with a wide range of backgrounds and abilities. While the obvious face of such institutes is the academic staff, there are also technicians, secretaries, drivers, administrative assistants and personnel of departments such as finance, purchasing and human resource. The success or failure of a research institute depends as much upon these staff members as it does upon the academics directly overseeing and running the research projects. Programs to upgrade academic staff members in an attempt to improve research excellence, may well fall short in overall if the pivotal role of the supporting staff is not taken into the equation, and the personnel development for support staff, where available, is on a more *ad hoc* basis.

A search of the literature shows a dearth of information on factors influencing employment satisfaction in life science research organizations, and so the survey presented in this work was undertaken to determine a baseline from which to propose a more rationally based management system for staff in research institutions.

The institute selected was the Institute of Science and Technology for Research and Development (ST) sited at the Salaya campus of Mahidol University, Thailand, the place of employment of one of the authors (A.N). The institute was established in 1981 and was merged in 2009 with the Institute of Molecular Biology and Genetics, Mahidol University to form the Institute of Molecular Biosciences. Prior to the merge, ST was one of nine institutes within Mahidol University, and was considered one of the leading research institutes within Thailand. At the time of the survey (one year before the merger), ST consisted of a total of 121 staff members, of which about 17 were academic staff and 104 were non-academic support staff.

Thus, nearly 86% of the institute staff members were non-academic support staff. The 104 non-academic staff comprised direct government employees, direct university employees and direct institute employees. All staff members were asked to volunteer to fill in a questionnaire consisting of 27 questions in 6 subject areas. A total of 105 completed questionnaires were returned (87%).

## MATERIALS AND METHODS

The study performed a survey of all staff at the Institute of Science and Technology for Research and Development, Mahidol University between January and March 2008. All staff members were asked to voluntarily complete a questionnaire. Completion and return of the anonymous questionnaire was evidence of consent to participate. Institute approval was obtained before the questionnaire was administered. The survey consisted of 27 questions in 6 sections (sections 1 - 6) covering attitudes to and perceptions of, the working environment as related to employee satisfaction. Responses were on a 5 point Likert scale (Likert, 1932), from "strongly agree" (5 points) to "strongly disagree" (1 point). An additional 5 demographic questions covering age, sex, employment history (years) and

salary range were included on the questionnaire. Questionnaire was developed and written in Thai, with translation used in this study generated by the authors. Original Thai version of the questionnaire is available on request.

## Statistical analysis

All data were analyzed by SPSS (SPSS Inc., Chicago IL) in both univariate and multivariate models. Significance was assessed as  $p < 0.05$ .

## RESULTS

The study population included 121 staff at a Thai life sciences research institute, the Institute of Science and Technology for Research and Development. A total of 105 (87%) completed anonymous questionnaires were returned. The complete questionnaire, minus demographic questions, is shown in Table 1.

As shown in Table 2, the majority of the study population were females (55.2%) aged between 31 - 40 years old (35.2%), had a Bachelor's degree (35.2%) and earned between 10,001 and 20,000 Baht (approximately US\$ 300 to 600) per month (58.1%). For duration of employment, the majority of respondents (41%) had been employed at the institute for between 11 - 20 years.

Overall, the mean score for all questions was  $91 \pm 12.7$ , with a range of scores between 51 and 128 from a theoretical range of 27 - 135. This would imply that the overall rating per question was 3.3, corresponding to a slightly neutral positive overall response. Per section, scores were  $13.7 \pm 3.8$  (section 1; out of a maximum of 25),  $13.4 \pm 2.3$  (section 2; out of a maximum of 20),  $14.6 \pm 2.1$  (section 3; out of a maximum of 20),  $19.2 \pm 3.2$  (section 4; out of a maximum of 25)  $16.6 \pm 4.0$  (section 5; out of maximum of 25) and  $13.4 \pm 2.4$  (section 6; out of a maximum of 20), corresponding to average responses of 2.7, 3.3, 3.6, 3.8, 3.3 and 3.35, respectively.

These results show that the lowest satisfaction was in the area of "career development" and the greatest satisfaction is in the area of "relationship with colleagues". This was supported by analysis of the individual questions, where Q14 (If the situation arises, a person will help his colleagues when required) scored the highest individual mean score ( $\bar{x} = 4.2 \pm 0.7$ ), while Q3 (a person believes he has a chance to obtain a senior management position within his institute) scored the lowest individual mean score ( $\bar{x} = 2.1 \pm 1$ ).

While there was no difference between males and females in the overall mean scores ( $p = 0.66$ ), significant differences were seen in the responses between males and females for questions 3 and 7. Men were more likely to believe that they had a chance to achieve a senior management position (Q3;  $p < 0.01$ ), and interestingly were more likely to stay in their present job rather than transfer to another one with better terms and conditions (Q7,  $p < 0.01$ ).

Older staff members were less likely to agree that their

**Table 1.** Full questionnaire (translated from Thai) and arithmetic means  $\pm$  standard deviation ( $\bar{x} \pm SD$ ) of responses.

		( $\bar{x} \pm SD$ )
<b>Section 1: Career development</b>		
Q1	My Institute supports and rewards further education (degree, advanced degree)	2.8 $\pm$ 1.1
Q2	My Institute supports my professional training (short course, specific area)	3.3 $\pm$ 0.9
Q3	I believe I have a chance to obtain a senior management position within my Institute	2.1 $\pm$ 1.0
Q4	My Institute promotes me based upon my abilities and expertise	2.8 $\pm$ 1.0
Q5	My Institute is fair in evaluating all staff based on skills/expertise	2.7 $\pm$ 1.0
<b>Section 2: Employment terms and conditions</b>		
Q6	I have good working terms and conditions (health insurance/pension/leave allowance)	3.1 $\pm$ 0.8
Q7	I would stay in my present job rather than transfer to another one with better terms and conditions	3.1 $\pm$ 1.0
Q8	My job has good job security	3.4 $\pm$ 0.8
Q9	My job does not give me problems with my life and family	3.7 $\pm$ 0.9
<b>Section 3: Details of work</b>		
Q10	Does your actual work equal your ability and training?	3.5 $\pm$ 0.7
Q11	Are your work duties the same as your official position?	3.5 $\pm$ 0.9
Q12	My work requires specific knowledge and ability	3.8 $\pm$ 0.8
Q13	My work has a lot of details that require careful attention	3.8 $\pm$ 0.8
<b>Section 4: Relationship with colleagues</b>		
Q14	If the situation arises, I help my colleagues when required	4.2 $\pm$ 0.7
Q15	I take the opportunity to learn from colleagues who have specific areas of expertise	4.0 $\pm$ 0.8
Q16	My colleagues and I discuss work problems	3.5 $\pm$ 0.9
Q17	My colleagues and I give suggestions or solutions to work problems	3.7 $\pm$ 0.8
Q18	My colleagues and I work together to complete work	3.6 $\pm$ 1.0
<b>Section 5: Relationship with immediate supervisor</b>		
Q19	My immediate supervisor trusts my work	3.5 $\pm$ 0.8
Q20	My immediate supervisor is fair to all the people that he/she supervises	3.3 $\pm$ 1.0
Q21	My immediate supervisor gives the impression that people under him/her are important	3.2 $\pm$ 1.0
Q22	My supervisor support his/her staff career development	3.2 $\pm$ 1.0
Q23	My supervisor often gives suggestions and advice on work matters	3.2 $\pm$ 0.9
<b>Section 6: Work environment</b>		
Q24	My institute has equipment that makes my work easier (computers etc)	3.4 $\pm$ 0.8
Q25	My Institute has a system that ensures a safe work environment	2.9 $\pm$ 0.9
Q26	My Institute has a pleasant work environment	3.2 $\pm$ 0.9
Q27	My Institute is convenient for me to commute to/from work	3.7 $\pm$ 0.9

supervisor often gave suggestions or advice (Q23;  $p < 0.001$ ), as if they had been employed longer (Q23;  $p < 0.05$ ). Interestingly, it was the staff members who were either lower paid, less educated or had been employed for a lesser time period that were more likely to agree that the institute supported their professional training with access to specific area short courses (Q2;  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.05$ , respectively). Staff members who had been employed longer ( $> 11$  years) were more likely to regard their environment favorably than staff employed for a shorter period ( $p < 0.005$ ).

Unsurprisingly, a very strong association was seen between level of education and salary ( $p < 0.001$ ). However, little difference was seen in the responses between the various education levels, with one exception. Q24 (a person's institute has equipment that makes his work easier (computer etc)) was more likely to be scored highly by those with Masters and Ph.D. degrees. Interestingly, while 99/104 (95%) of staff without PhDs filled in the survey, only 6/17 of the staff with PhDs participated (35%;  $p < 0.001$ ), suggesting that their view may be somewhat under-represented.

**Table 2.** Basic demographic details of 105 staff member of a life sciences institute who completed a survey on employment satisfaction.

	Number	Percent
<b>Sex</b>		
Male	47	44.8
Female	58	55.2
<b>Age</b>		
< 30 years	24	22.9
31-40 years	37	35.2
41-50 years	34	32.4
>50 years	10	9.5
<b>Education</b>		
< Bachelors	34	32.4
Bachelors	37	35.2
Masters	28	26.7
Ph.D.	6	5.7
<b>Salary</b>		
<10,000 Baht	17	16.2
10,001-20,000 Baht	61	58.1
20,001-30,000 Baht	19	18.1
>30,000 Baht	8	7.6
<b>Employment duration</b>		
<5 years	32	30.5
5-10 years	17	16.2
11-20 years	43	41
>21 years	13	12.4

## DISCUSSION

To the study's knowledge, this is the first study of factors relating to employee satisfaction from a life sciences institute in a developing country. One previous study on support staff in a University Medical Center in the Netherlands has been published (Renkema et al., 2009). However, in general, management systems in the West are more evolved than those in developing and under-developed countries. Surveys, such as this one provide a convenient, cheap and quick method of assessing staff satisfaction, and potentially identifying problem areas.

Assessment of job satisfaction is primarily undertaken through two routes, through questionnaires (as administered here), or through personal interviews. Personal interviews are however, time consuming and expensive, and are open to prejudice depending upon the relationship between the interviewee and the interviewer. The most widely used job satisfaction questionnaire is the Minnesota Satisfaction Questionnaire (MSQ). In its full form, this consists of a list of 100 questions covering

20 different areas and is protected by copyright. As with the study here, the questionnaire uses a 5 point Likert scale for scoring of responses (Likert, 1932).

In Thailand, as elsewhere, there is an increasing importance placed upon life sciences/biotechnology as a way of addressing issues in both agriculture and human health (Avellanet, 2009; Svasti, 2001), and as such research centers, either broadly based or addressing single topic issues are central to these efforts. In the institute assessed in this report, over 85% of the staff are non-academic, or have a degree less than PhD. The non-academic support staff are therefore, an essential component of the overall research effort, and may be considered as the "unseen face" of science. As noted earlier, while numerous programs exist within Thailand, directed at developing academic and senior research talent, few, if any such schemes, exist to nurture and develop non-academic staff working in research institutions.

Overall, all staff only graded their satisfaction in employment as neutral to slightly positive, and as such this should be seen as an area for concern as numerous studies in other areas have drawn direct links between employee satisfaction and productivity (Forsyth, 2006; Gazioglu and Tansel, 2006; Roelen et al., 2008a), while others have indicated that job satisfaction is inversely correlated with absenteeism (Roelen et al., 2008b) and health (Faragher et al., 2005) as low job satisfaction can harm both the individual and the institution.

There was little difference in the level of responses between staff with different academic levels, but the low return of completed questionnaires from academic staff (6/17) is perhaps worthy of comment. This may suggest that they see their working environment differently from other staff members, and are less concerned with its overall performance, or possibly that they believe other indicators (such as productivity or academic progression) are more important than simple employment satisfaction. The single significant difference seen between those academics who did respond and other staff was in relation to the availability of equipment to make their job easier (Q24). The question specifically asked with respect to computers etc, rather than research equipment and so, it can be proposed that computers and other equipment are at least in part supported by other income streams (such as grants) or through personal purchase, especially given the strong correlation between degree level and income. It is interesting to speculate as to whether greater response by academic staff would have produced a significantly different response. However, as noted previously, the weight of the institute (academic staff compared to non-academic staff) is towards the academic support staff that comprise 85% of the staff. As such, even complete compliance from the academic staff would not have dramatically altered the results. More directed questionnaires towards academic staff may need to be designed and administered, although given the small numbers of academic staff, several

institutes, or even departments would need to be surveyed.

While it was encouraging to observe that the more junior staff (in terms of education, employment length and salary) felt they were more strongly supported in terms of access to short, professional course training as compared to the longer serving/older staff, the survey also pinpointed that the more the established staff felt less served by the provision of these services, as well as the feeling that they were less likely to be advised by more senior colleagues/supervisors. This underlines a need to ensure that even long service or older staff members are actively encouraged to continue their professional development, especially to keep abreast of changes in procedure or policy.

In order of satisfaction, staff rated "relationship with colleagues" as the highest, followed by, in order, "details of work", "work environment", relationship with immediate supervisor, employment terms and conditions (equally) and career development (last). The last place of "career development" may also be a cause for concern. While academic staff tend to have well defined professional career paths (from Lecturer to Professor), support staff perceive that they have less well defined opportunities. Increased emphasis on career progression for all staff may well serve to heighten employment satisfaction.

Two questions, Q5 and Q20 dealt with "fairness". It was interesting to note that while immediate supervisors are thought to be generally fair to all the people that they supervise ( $\chi = 3.3$ ), it was perceived that the institute was somewhat less than fair in evaluating all staff based on skills/experience. Possibly, more open evaluation/ promotion exercises could address this issue. The generally high scores for questions dealing with relationships with colleagues suggest that team work and peer networking were functioning within the institute, although obviously room for improvement exists. In the section, "work environment", Q25 (a person's institute has a system that ensures a safe work environment) scored markedly lower than other questions in this section, possibly pointing to a problem. As a life sciences research institute, work may be deemed dangerous as a result of the numerous chemicals and reagents used. More detailed analysis may be able to differentiate as to whether this is a 'real' or 'perceived' threat due to insufficient education as to the actual risks present.

The questionnaire was conceived, designed and distributed by one of the institute support staff (A.N.) and as such may have been perceived in a less threatening light than a "top down" questionnaire. The fact that the questionnaire was driven by one of the support staff may also be one of the reasons behind the high compliance with non-academic staff, and lower compliance with academic staff. Although, relatively short, this questionnaire has indicated some areas of concern with respect to manpower satisfaction in the working environment, and as such, similar questionnaires might provide a quick route to gaining an idea of the "health" of the working environment from research institutes in developing and under-developed nations.

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## REFERENCES

- Avellanet J (2009). Thailand biotech business: Product of the national policy. *J. Commercial Biotechnol.*, 15: 66-72.
- Faragher EB, Cass M, Cooper CL (2005). The relationship between job satisfaction and health: A meta-analysis. *Occupational Environ. Med.*, 62: 105-112.
- Forsyth P (2006). Motivating your staff. *Elektron*, 23: 9-10.
- Gazioglu S, Tansel A (2006). Job satisfaction in Britain: Individual and job related factors. *Appl. Econ.*, 38: 1163-1171.
- Liefner I, Schiller D (2008). Academic capabilities in developing countries-A conceptual framework with empirical illustrations from Thailand. *Res. Policy*, 37: 276-293.
- Likert RA (1932). A Technique for the measurement of attitudes. *Arch. Psychol.*, 140: 1-55.
- Numprasertchai S, Igel B (2005). Managing knowledge through collaboration: Multiple case studies of managing research in university laboratories in Thailand. *Technovation*, 25: 1173-1182.
- Renkema A, Schaap H, van Dellen T (2009). Development intention of support staff in an academic organization in The Netherlands. *Career Dev. Int.*, 14: 69-86.
- Roelen CAM, Koopmans PC, Groothoff JW (2008a). Which work factors determine job satisfaction? *Work*, 30: 433-439.
- Roelen CAM, Koopmans PC, Notenbomer A, Groothoff JW (2008b). Job satisfaction and sickness absence: A questionnaire survey. *Occupational Med.*, 58: 567-571.
- Svasti J (2001). Bioscience and its impact on developing countries. A view from Thailand. *EMBO Rep.*, 2: 648-50.
- Taharnklaew R (2010). *The Scientist: Private Sector Power*.