The Possibility of Using Electronic Monitoring as an Alternative to Imprisonment for Drug Offenders

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Abstract
This research aims to study the use and efficacy of electronic monitoring (EM) as an alternative for incarceration in instances of drug offenses for both Thai nationals and foreign offenders. A mixed research methodology of qualitative and quantitative data was used. The statistical analyses included frequency distributions, percentages, means and multiple regression analysis. Research results indicated several issues in the monitoring and rehabilitation of drug offenders through the Department of Corrections in Thailand. Many of the current issues in the application of EM stems from an insufficient number of monitoring devices, a shortage of trained specialists and lack of alternative rehabilitation facilities. Given the research findings, it is recommended that the Department of Corrections modernize its technology in order to improve the efficiency and efficacy of its work. The use of electronic monitoring with drug offenders facilitated early prison release, increased parole rates and sentencing periods. However, in order for this program to be more fully realized as a viable solution, there needs to be greater cooperation from the public and private sector in addition to improved monitoring device technology and design. The use of electronic monitoring for drug offenders was received well by most corrections personnel as a viable solution to alleviate prison overcrowding, resource allocation and facilitate a more sustainable path towards rehabilitation. However, the effect of electronic monitoring on administrative systems, corrections budget and functional transparency pose potential issues to the technology's implementation.
Keywords*:* Drug Offenders, Electronic Monitoring, Incarceration Alternatives, Corrections, Imprisonment

Introduction
Currently, as of August 2016, the Thai prison system is at a capacity of 324,591 detainees, though it was built for a capacity of just 190,000 prisoners. Of the 140,000 prisoners over-capacity, 70.14% or 227,668 have been incarcerated for drug related offenses (Plan Division, Department of Correction, 2016). Furthermore, current projections estimate that the total number of prisoners could reach 400,000 in 2018, which is over twice the intended prison capacity. Prison overpopulation not only adversely affects prison conditions and quality of life, but also poses serious challenges to prison organization, welfare, training and custody. Overcrowding creates cramped living conditions, less effective programs and inhibits inmates' path towards rehabilitation by limiting resources such as job training, which can in turn increase rates of recidivism. (Doungsiri, 2003: 33-44)
Efforts have been made to alleviate prison congestion through crime deterrence or reclassification of crimes from criminal to civil offenses, though the larger issue still very much remains unresolved. For example, some punishments for certain kinds of theft, like check fraud, can be altered from criminal to civil offenses, while trial postponements, sentencing delays, and civil suits are also employed as means of alleviating prison overcrowding (Chanhom, 2013: 51-80). Within prisons, the Department of Corrections has made efforts to quell overcrowding by advocating for parole, commutation, release by

absolution, probation and provisional rehabilitation programs to improve the conduct of detainees. Programs focusing on mental rehabilitation are also of importance, especially in cases of drug offenders. (Chitsawang, 2002: 114-143, 192-203)

Despite their efforts, however, the Department of Corrections still faces serious and unrelenting overcrowding issues with few viable solutions, especially for drug offenders. Previous strategies to prevent drug offenses have relied on threats of punishment and incarceration as deterrents. Yet, as evidenced by the Narcotics Addict Rehabilitation Act of 2002, it fails to ultimately solve underlying problems leading to drug related arrests and convictions (Khokruea, 2015: 1). Consequently, this research focuses on a solution to reduce the number of drug related inmates in the prison system across all sectors of prison populations, for both females and males. This work also is concerned with human rights and the rehabilitation of prisoners. Finding rehabilitative alternatives to incarceration is therefore, vital, not just as a solution to prison overcrowding, but also to improving the quality of life for convicts and offering the best path towards rehabilitation rather than recidivism. Social communities will participate in rehabilitation to replace imprisonment. Electronic monitoring (EM) systems hold promise as a potential solution, as they allow prisoners to focus on rehabilitation and reintegration into society outside of prison confines. Yet, corrections officials are still able to monitor them and impose regulations and limits on their actions. It is crucial that the justice system adopt modern technologies in its incarceration and crime prevention strategies. Currently, the Department of Corrections utilizes various prison surveillance technologies such as CCTV, call monitoring, monitoring of relative visits, and forms of audio and visual surveillance. Electronic monitoring devices are also being used to supervise probation and in instances of bail. (Ministry of Justice, 2013: 22-25)

The technology itself for EM consists of a strip device equipped with GPS (global positioning system) similar to technology used in mobile phones. SDS, or the Signal Detection System, indicates if the wearer has violated the imposed boundaries. If boundaries are violated, a signal is sent to a control center, which then notifies the police or probation authority.

The gradual integration of EM devices by the Department of Corrections provides promising evidence that it could also be implemented as an incarceration alternative for certain crimes and conditions in Thailand. Under Articles 89/1 and 89/2 of the Criminal Procedure Code Amendment Act (No.25) 2007 and the 2013 Ministry of Justice Criteria for Imprisonment, the court has the power to dictate how and where the accused is detained outside of the prison system, either prior to trial or while under bail. EM devices have thus far been implemented to monitor individuals in these circumstances and prevent escape. (Ministry of Justice, 2013: 22-25)

Therefore, there is already a precedent of use of electronic monitoring devices and their integration for drug offenses would not require profound or unduly alterations to the system. Moreover, the potential benefits for such an adaption are significant, as EM could reduce prison overcrowding, increase efficiency and resource allocation in the control and treatment of prisoners, reduce crime rates and offer a path towards rehabilitation and reintegration into society. This study will also examine the efficacy and efficiency of EM in experimental trials with drug offenders, with the Department of Corrections implementing it as an alternative to incarceration through home or office detention. Furthermore, EM in these circumstances have the potential to more effectively address and solve underlying factors relating to drug offenses by allowing for the treatment of addition, rather than simply applying punitive measures.

Literature Review

Modern philosophies (Braithwaite, 2002: 93-101) of punishment aim to rehabilitate offenders in order to reintegrate them into society as productive, contributing members, with low

recidivism, as opposed to punitive measures exacted for pain and revenge, which ultimately only serves to alienate offenders from society. Furthermore, criminal punishments should not only provide justice, but also act as a deterrent to future crimes, reduce recidivism and foster a sense of security in society. While these aims and mentality are ideal, the reality is that punishment is enforced in a myriad of ways, ranging from execution to corporal punishment, monetary sanctions, such as fines, compensation and various types of prohibitions and restrictions. Thai judicial laws, under the Thailand Penal Code B.E. Article 56, empower the court to exercise discretion regarding imprisonment and incarceration alternatives. However, in the reality is, incarceration of offenders is still the most prevalent course of action. In some cases, many offenders do not deserve incarceration or the length of incarceration does not reflect the severity of their crime. This has resulted in an overcrowding of the Thai prison system and adversely effected living conditions.

In considering the history and theories of incarcerations, it could be argued that prisons should be reserved for deadly or violent criminals, who endanger social welfare. Yet, prisons are broadly used for a spectrum of offenses includingpetty crimes, drug-related offenses, and non-violent negligent offenses. Many foreign countries have begun to differentiate between violent and non-violent crimes in prison sentences, opting instead for non-custodial sentences, which employ EM devices, as an intermediary punishment between parole and full prison incarceration. (Lertpanichphan, 2003: 67)

Residence-based monitoring is the most flexible and popular of the EM options, with potential monitoring durations ranging from a few hours to a few years. Furthermore, it could be implemented throughout the criminal justice process, not simply as a punishment sentence for a guilty verdict, but as a way to replace imprisonment before trial, during bail proceedings or as apart of probation. EM would allow the control of offenders within specific geographic locations such as the home or office for specific periods during the day or night. This system would reduce the stress of overcrowding in prisons, while also allowing offenders to be in an environment that is more conducive to their rehabilitation and personal development (Chitsawang, 2007: 35-37)

Yet, while this system proves promising, there are some issues that must be resolved, before it can be fully adopted. Current monitoring devices have some technological uncertainties, with shortages in control centers throughout Thailand. The ability to disable or destroy the device is also not fully preventable at this time. Lastly, the judicial and police systems are currently not equipped to deal with large scale electronic monitoring operations, as personnel are neither properly trained to handle the technology nor is there a sufficient technological infrastructure in place. In order to foster trust in the system among the judicial system and public, the technology, infrastructure and personnel issues must be addressed. (Chitsawang, 2007: 35-37)

The use of EM has been adopted in other countries, such as the United States. In Palm Beach, Florida, EM is used in some criminal sentences both as a way to more effectively rehabilitate prisoners, while also reducing overcrowded prison populations. Between 1988 and 1998, in the U.S., the number of offenders using EM has risen from 2,300 in 32 states to over 95,000. Today, EM is used in every American state. The United States has also implemented strategies for “intermediate punishment” or non-institutional treatment as an alternative to incarceration. It is focuses on specific case rehabilitation by using efficient and diverse methods, which often include EM, community services and intensive probation supervision (IPS/ISP). Beyond the United States, it is also utilized in Australia and Europe. (Chitsawang, 2007: 35-37)

In 2013, the Thai government passed laws concerning imprisonment and movement restrictions, which gives the option for courts to elect for electronic monitoring as an alternative to prison sentences. The Department of Probation has also embarked on a pilot

program for EM devices under the Plan of Law Development and Justice Administration through the Ministry of Justice (Department of Probation, 2015). Moreover, officials in the Thai Ministry of Justice advocate for the use of EM as a tool to facilitate the rehabilitation and return of offenders to functioning society. It could be seen to be especially beneficial for female offenders, the elderly, juveniles and young people who commit non-violent offenses, such as drunk driving. Often in these cases, prison sentences would not normally exceed a year and EM is viewed as a more effective alternative to incarceration for these crimes. However, issues of budget, uniformity of justice between the wealthy and the poor, and the uncertainty of technology still need to be addressed before EM can be a fully viable alternative.

A study in 2007 conducted by Chitsawang and Petchmuni, "A Project to Evaluate Performance of Using EM (Electronic Monitoring) with Culprits" found that the use of EM was effective in use with first time offenders, petty offenders and those for whom prison sentences were less than two years. Their study also indicated that the state should be responsible for the cost of EM devices and monitoring systems. The 2010 study, "Controlling Detainees with EM," by Thanathitiwong further discusses the willingness of foreign governments to use EM as an alternative to incarceration.

The 2016 study, "Developing Approaches in Implementing EM for Culprits in Thailand," by Tanneekul found that EM systems used abroad as incarceration alternatives were implemented in cases of misdemeanors or first time offenders. In some countries, it is used during trial proceedings to monitor the accused. Furthermore, some countries have allocated resources for specialized EM control centers to monitor these individuals. The study revealed obstacles to the adoption of EM in Thailand including clear legal precedents, measures to support EM, lack of knowledge and understanding by authorities of the technology and its use, and inadequate personnel numbers to effectively oversee the use of EM. Furthermore, unreliable signal systems and device deficiencies including durability, size and weight were also of concern.

The need for incarceration alternatives as a result of prison overcrowding is not isolated to Thailand, but is found in many countries. Increasingly, judicial policies are seeking to not just enact punishments, but work to rehabilitate the individual in a larger social context, largely through incarceration alternatives. The United Nations Standard Minimum Rules for Non-Custodial Measures (the Tokyo Rules) seek to promote alternatives to incarceration and foster greater community involvement in criminal justice proceedings. (Bunnag, 2013: 4-6)

In response to the Tokyo rules, Thailand has amended its Criminal Procedural Code in Article 89/2 (3), permitting non-institutional treatment. Additionally, criteria for the adoption of EM for offenders have been outlined by the Ministry of Interior in accordance with the Criminal Procedural Code. Furthermore, the 2015 amendment to the Criminal Procedural Code, outlines the use of EM:

[It] permits [the] temporary release; the personnel authorized on order of temporary release or the court demands conditions of residence or any other conditions for temporary release in practices or the case of the persons consents to order EM or any other devices possible for tracking the temporary released persons. As such, it is to prevent escape or dangers or damages that might occur. On the contrary, if the prisoner is younger than eighteen years old and even he/she agrees and the EM use is possible when his/her behaviors seriously endanger other persons or deserved by other causes. (The Criminal Procedural Code Amendment Act (No.30) 2015, Article 108 Paragraph III)

In cases of drug offenses, treatment and judicial proceedings can be a complex process. Rehabilitation for drug-addicts is a multistep, multifaceted process that is very much rooted in the community as well as the judicial system. It begins with a primary period of treatment involving detoxification and stabilization and continues through the return and reintegration

of the individual into their community. This process involves many individuals and agencies from healthcare providers to social services and criminal justice personnel. Treating drug addictions and drug related offenses is not a responsibility isolated to the criminal justice system, but must integrate a holistic approach that addresses the root causes of the problem. Treatment strategies that involve communities including local administrative organizations, community members and key individuals in the life of the addict are vital to building a strong social network of support that promotes rehabilitation rather than relapse.

Community-based rehabilitation programs have been shown to have much greater efficacy in dealing with drug offenders than incarceration. EM can act as a bridge helping to foster a sense of public safety in communities, allowing drug offenders to recover within communities rather than within prison walls.

Existing research on EM indicates that the technology offers a viable alternative to incarceration and a means for community-based corrections and rehabilitation. It reduces prison populations and reduces the costs associated with prison overcrowding. However, concerns over the cost of device technology, infrastructure, criteria for situational use and public perception remain as current barriers to implementation.

In addition to its potential use to allow low-risk drug offenders to carryout sentences outside of prisons, thereby reducing prison overcrowding, EM also has significant application potential within the prison system. EM can help corrections personnel more efficiently monitor inmates, especially high-risk offenders, such as high profile drug-dealers. Currently, the DOC uses wrist-cuffs, ankle cuffs, chains, and other restraints to prevent prisoner escape while in transport or outside the confines of prisons. These restraints are not only inefficient, but also pose serious human rights violations. EM could be used as alternative method to prevent prisoner escape that is far more humane.

Research Objectives

1. To study measures and models for the use of EM systems in cases of drug offenses in both Thailand and abroad, in the United States, Australia and Europe.
2. To study the feasibility of using electronic monitoring in cases of drug offenses through the Thai Department of Corrections and determine conditions for effective implementation of electronic monitoring systems.

Scope of Research

To investigate the potential use of electronic monitoring as an incarceration alternative, this study worked qualitatively with the justice administration, prisoners and people of the Khlong Teoi District of Bangkok. This study also employed quantitative data collection through the Department of Corrections and prison system in the Bangkok metropolitan area.

Research Methods

Population and samples: The qualitative research was done using three populations groups. The first consisted of thirteen specialists in justice administration. The second group consisted of four local people, who live in an area of narcotic prevalence. The third group consisted of eight convicts, four males and four females, who were serving time for drug related charges. For the quantitative data, 211 Department of Corrections personnel and 217 drug offender inmates were studied.

Research instruments: These comprised of an in-depth interview format and a questionnaire divided in to three parts including 1.) Personal data of respondents, 2.) Opinions expressed via 5 tier rating system, and 3.) Recommendations by respondents.

Data collection: The in-depth interviews were conducted with 25 key personnel, with 100% completion. The questionnaire was distributed to 428 respondents, also with a 100% response rate.
Data Analysis: Data was analyzed using frequencies, percentages, means, standard deviations, t-tests, multiple regression analysis and content analysis.

Results and Discussions

The interviews and questionnaire was designed to analyze issues surrounding the monitoring of prisoners, approaches and thoughts regarding the use of electronic monitoring (EM) as an effective mechanism, both theoretically and practically.

Measures & Models

In studying the measures and models for use of EM of drug offenders, it was found that both abroad, in the United States, Australia and Europe, as well as in Thailand, EM is used mostly for behavioral monitoring in parole and restricting the movement of offenders in theirhomes through house arrest. As it is currently used globally, EM aims to reduce prison congestion and incarceration costs. Additionally, in some countries, such as EM is also employed to monitor prisoners in low security prisons.

In Thailand, the current application of EM also extends to monitoring and restricting the travel of convicts or arrested persons. The Corrections Act of 2017 stipulates conditions for the monitoring of offenders outside of prisons with EM, outlining determining factors such as familial dynamics and support.

Analysis of qualitative and quantitative research illustrates cohesion of implementation strategies for EM in drug related offenses between foreign countries and Thailand. Furthermore, both quantitative and quantitative research indicates that support for EM use in drug offenses from prison wardens, detainees and justice administration personnel. The measures and models applied in Thailand are illustrated by Figure 1.

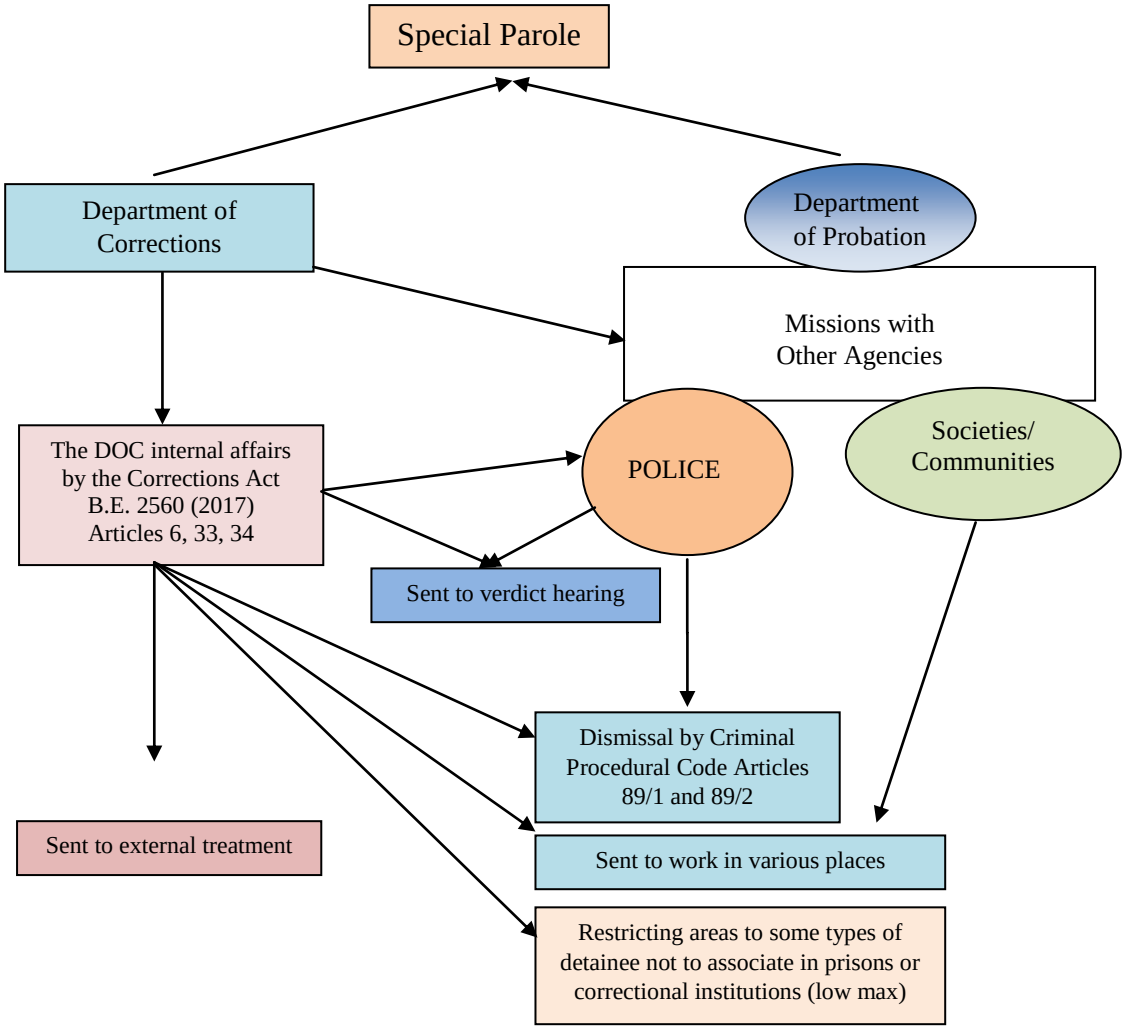


Figure 1 The strategy for EM implementation with drug offenders under the supervision of the SOC and their peripheral agencies

Results

This study aimed to determine with whom and under what conditions EM could be effectively used to mitigate prison overcrowding, especially in instances of drug related offenses. Interview data revealed that the DOC attempted to solve overcrowding of drug related offenders by establishing a prison-based treatment model. However, this proved impossible.

Many interviewees indicated a concern regarding high profile drug-traffickers, noting that monitoring through EM would prove challenging, as the technology can still be manipulated, thus allowing for their escape. Respondent also, however, noted that the use of EM would greatly facilitate the efficiency and efficacy of the DOC for monitoring these high-risk individuals within a prison.

That data indicates respondents were largely in favor of the use of EM for drug offenders. It should be noted that their responses and recommendations mirror many of the approaches currently in place abroad. The respondents indicated:

1. Those considered eligible for EM should be:

1) First time offenders

2) Drug users/ possessor (not dealers)

3) Not be a drug dealer identified by the Office of Narcotics Control Board (ONCoB) and the DOC. Drug dealers or those considered flight risks, who would be permitted to use EM would have specially outfitted devices that were less destructible

4) Drug traffickers, who are victims with no prior record of criminal behavior
5) Prisoners who are less than a third of the way through their first sentence
6) Prisoners with less than a year remaining in their sentence
7) Those with no prior criminal record
8) Female inmates who are pregnant or who have an infant (Note: If under EM monitoring, female offenders are permitted to get pregnant while being monitored.)
2. Additionally, prisoners eligible for EM should they meet the following qualifications as well:
1) Prisoners must have demonstrated good behavior
2) Those not in possession of narcotics, either in person or in their dwellings
3) Prisoners with strong familial or social networks, who can oversee their parole
4) Those without mental disorders or disabilities
5) Those who pass a physical and psychiatric evaluation
6) Those who receive permission for drug rehab treatment outside of prison
7) Those who consent to EM monitoring by the DOC, with backup measures in place in the event of EM device failure.
8) Submit to randomized drug tests, with alcohol and drug use prohibited
3. Those permitted to use EM should be in accordance with the terms set forth by the Ministry of Justice on Specification of Criteria for Parole and Requirements, the Tokyo Rules and the Bangkok Rules, also called the United Nations Rules for the Treatment of Women Prisoners and Non-Custodial Measures for Women Offenders, adopted in 2010 (UNODC, 2010).

In qualitative data analysis, it was shown that most DOC personnel and inmates believe EM would mitigate prison overcrowding and allow for more effective inmate monitoring. However, concerns were voiced about the managerial model, operational budget and its transparency. If they were addressed, respondents indicated EM use in Thailand would be more beneficial in future.

Quantitative research illustrated that wardens and detainees trust that EM can be used without error and that the DOC can equip personnel with sufficient operational knowledge. However, they noted that measures needed to be taken to prevent corruption and prejudice in use and monitoring. Furthermore, community involvement in observation and monitoring of EM users was also seen as a viable option. To fully test EM as a sustainable solution to reducing the number of drug offenders in prison, trial experiments using the technology must be conducted in principle regional prisons such as Klongprem Central Prison or Bangkwang Central Prison or in other special correctional institutions.

In addition, analysis was conducted to find the relationship between limitations to rehabilitation of drug offenders and models for EM. The results are as follows:

1. The investigation of factors affecting the confidence

H_o: the problems, the procedure and the conditions that influence confidence in EM use

H_1: the problems, the procedure and the conditions that do not influence confidence in EM use

Table 1 Multiple regression of overall variables with the confidence in using EM with drug offenders

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate
2	.454	.206	.200	8.742

Table 1 illustrates the analysis of the three factors effecting confidence in EM, revealing that the procedures, problems, limitations and conditions moderately affect confidence in EM with an R value of.454 and R^2 value of.206.

Table 2 Independent variables allowing predictions of confidence in EM with drug offenders under the supervision of the DOC

Model		Sum of Squares	df	Mean Square	F	P
2	Regression	8406.728	3	2802.243	36.666	.000*
	Residual	32404.400	424	76.425		
	Total	40811.129	427			

*P<0.05**

Table 2, illustrates a statistical significance of 0.000 for the variables of procedure, problems and conditions effecting confidence in EM use with drug offenders.

Table 3 Regression correlation vales of the 3-independent variables with the confidence in using EM with drug detainees under supervision of DOC

Model	Variables	Unstandardized Coefficients		Standardized Coefficients	t	P
		B	Std. Error	Beta		
1	(Constant)	20.311	3.821		5.316	.000*
	1. Development approach	.339	.044	.428	7.705	.000*
	2. Problems	-.374	.078	-.239	-4.798	.000*
	3. Conditions	.167	.064	.141	2.624	.000*

a. Dependent Variable: confidence *P<0.05**

Table 3 illustrates the predictive formula:
Y = 20.311 + 0.339 (procedure) - 0.374 (problems and limitations) + 0.167 (conditions)
The b values of the procedure -0.339 means the development approaches of the model in using EM with the drug offenders increases by 1 unit. The confidence in using EM with drug offenders under the supervision of the DOC increases to 0.339. When testing the significance, this illustrates that the first hypothesis is accepted with P-Value = 0.000.
The b values of problems and limitations = -0.374 means problems and limitations of control and rehabilitation the drug offenders under the supervision of the DOC increases 1 unit. The confidence in using EM with drug offenders under the supervision of the DOC decreased to -0.374. When testing the significance, this means that the first hypothesis is rejected at P-Value = 0.000.
The b values of conditions = 0.167, which means that the appropriate conditions/model for EM use with the drug offenders under the supervision of the DOC increases by 1 unit. The confidence in using EM with drug offenders under the supervision of the DOC increases to 0.167. When testing the significance, this means that the first hypothesis is accepted at P-Value = 0.000.
The beta value of the development was the highest value at = 0.428 followed by the problem (beta=-0.239) and conditions (beta = 0.141). It can, therefore, be concluded that confidence in using EM for drug offenders is most dependent upon procedures followed by problems and limitation in control of offenders and conditioning/modeling appropriate to use EM with drug offenders under supervision of the DOC.
2. The investigation of factors affecting the possibility
The fourth hypothesis - the relationship between problems, confidence, procedure, and condition influence the possibility in using EM for custody.
H_o: Problems, confidence, procedures and conditions influence the possibility in using EM for custody.

H_1: Problems, confidence, procedures and conditions do not influence the possibility in using EM for custody.

Table 4 Statistical values for a multiple regression determining the possibility of using EM with drug offenders under the supervision of the DOC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.673	.453	.449	.3655

b. Predictors: (constant)-investigating possibility

Table 4 illustrates an analysis of four variables, showing that three factors, i.e. conditions, confidence and procedure have a moderate relationship with the possibility at 0.673 and can predict the variance of the possibility level in using EM with drug offenders at 45.3%.

Table 5 Checking the overall independence of variables, allowing predictions of accepting EM use with drug offenders under DOC supervision

Model		Sum of Squares	df	Mean Square	F	P
1	Regression	4695.962	3	1565.321	117.161	.000*
	Residual	5664.830	424	13.360		
	Total	10360.792	427			

*P<0.05**

Table 5 illustrates that of the four independent variables, three variables (conditions, confidence and procedure) effect the possibility of using EM with drug detainees under supervision of DOC with statistical significance at 0.00 levels.

Table 6 Regression correlations of the overall 3-independent variables for the possibility of using EM with drug offenders

Model	Variables	Unstandardized Coefficients		Standardized Coefficients	t	P
		B	Std. Error	Beta		
1	(Constant)	4.855	1.546		3.140	.002*
	1.Conditions	.196	.026	.327	7.452	.000*
	2.Confidence	.170	.020	.337	8.592	.000*
	3. Approaches	.080	.018	.201	4.391	.000*

a. Dependent Variable: possibility
*P<0.05**

Table 6 shows details the predictive formula as follows: Y = 4.855 + 0.196 (condition) + 0.170 (confidence) + 0.080 (procedure).
The b values of the condition = 0.196 means the appropriate condition/ model for using EM with the drug offenders increases 1 unit. The possibility investigation for using EM with drug offenders increases to 0.196. When testing its significance, it is found that the second hypothesis is accepted with P-Value = 0.000.
The b values of the confidence = 0.170 means that the confidence in using EM increases 1 unit. The possibility investigation in using EM increases to 0.170. When testing its significance, it shows that the second hypothesis is accepted at P-Value = 0.000.
The b values of the procedure = 0.080 means the procedure in using EM increase 1 unit. The possibility investigation increases to 0.080. When testing its significance, it is found that the second hypothesis is accepted at P-Value = 0.000.

The beta value of the confidence in using EM for custody earns the highest value at 0.337 followed by the condition (beta= 0.327) and the procedure (beta = 0.201). It can, therefore, be concluded that the possibility of EM use for custody is most dependent on confidence followed by the appropriate conditions/model and the procedure for EM use, respectively.
From the first and the second hypotheses for problems and limitations in monitoring drug detainees, the procedure for EM use and the specifications of offender grouping and conditions affecting EM use confidence and the possibility in using EM with the drug offenders illustrated in Table 4.18

Table 7 Summary of testing hypotheses 1 and 2 from Tables 1-6

	Problems and limitations in monitoring drug detainees	**Approaches in improving and developing the model of using EM**	**Specification of the detainee group and conditions to use EM**	**Confidence in using EM with drug detainees under DOC**
Confidence	b = -0.374 p < 0.001	b = 0.339 p < 0.001	b = 0.167 p < 0.001	-
Possibility	-	b = 0.080 p < 0.001	b = 0.170 p < 0.001	b = 0.196 p < 0.001

Table 7 shows that using a Stepwise Multiple Regression Analysis, that the problems and limitations, procedure, the group specifications, and the conditions for EM use effect the confidence and the possibility of EM use with drug offenders with a statistical significance of 0.001.
Additionally, the factor of improvements and procedures, the group specifications, the conditions and confidence in EM use affecting the possibility of EM adoption had a statistical significance of 0.001.
The quantitative research supports the qualitative data collected regarding confidence in EM as a solution to prison overcrowding and a more effective means of handling drug convictions. To conclude, confidence in EM as a solution and use as a viable solution relies on clear criteria for determining whom and under what conditions EM should be used with drug offenders, as demonstrated by Figure 2.

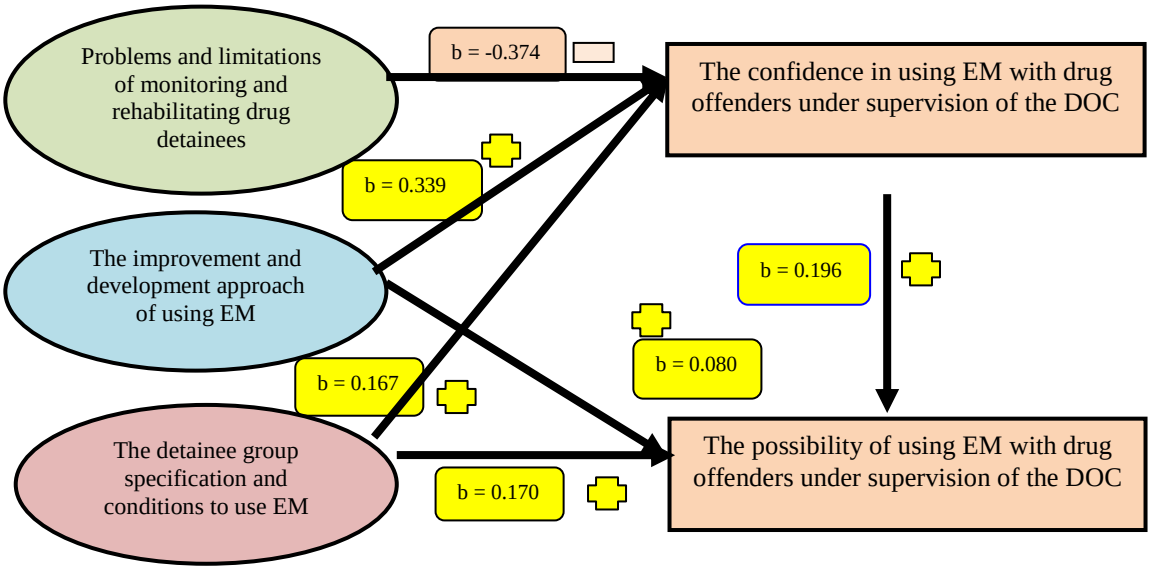


Figure 2 The relationships of factors effecting confidence and the possibility of using EM with drug offenders under supervision of the DOC

Figure 2 illustrates how EM can result in better prison conditions. Future methods using ER must resolve issues relating to the monitoring and rehabilitation of offenders. This data corresponds and corroborates the 2016 investigation by Tanneekul previously discussed.

Analysis of Statistical Results

The statistical analyses clearly indicate that respondents have high rates of confidence in EM as a viable incarceration alternative for drug offenders. The respondent data also indicates:

1. The DOC is currently encountering serious issues regarding adequate monitoring and rehabilitating of inmates in their custody. A solution must be found and considered in order to alleviate problems of prison overcrowding.
2. EM offers a viable solution. However, care must be taken in the determination of who and the conditions under which offenders are selected for EM. Further trials are needed to more fully understand the practical applications of EM.
3. In specifying those who qualify for EM use, it is necessary to clearly define standards and goals pertaining to behavior and rehabilitation. Furthermore, more data is needed to corroborate assertions that EM reduces rates of recidivism, especially in cases of drug offenders.
4. Confidence in using the EM system for drug offenders in the DOC is dependent on the ability wardens having adequate training and expertise in the EM technology and the DOC having adequate personnel. The budget for an EM would be allocated from the national budget, including funds derived from taxation and monetary confiscation from crimes. Full transparency in the budgeting for an EM program is vital to prevent corruption or the abuse or misallocation of funds.

The data collected in this study underscores the need to reevaluate incarceration goals and objectives in order to provide the most conducive environments for rehabilitation and the prevention of recidivism. Therefore, experts in criminology, penology and justice administration should be consulted in an advisory capacity on the development of the EM program. This assertion is supported by the research of Sujaritchan, who published a study on "The Attitude of the Personnel in Justice Administration to Applying Electronics Monitoring Device (EM) to Be Used in Thailand" in 2010. His findings support the evidence that there is significant agreement that EM offers a beneficial alternative to incarceration in dealing with

offenders, though the structure and objectives of the program require further study. Better specifications for the qualifying population for EM, a clear procedural outline, specifications and objectives would increase the likelihood of EM's adoption and use the Thai justice process. Moreover, compelling data from EM trials is also needed to sway public opinion and bolster confidence in EM as a solution. Due to the fact that EM would place recovering drug offenders in public as apart of their recuperation and rehabilitation process, the involvement of communities and support systems is vital to the goals of EM. Yet, the technology must also be reliable and effectively monitored so that the public has confidence that while these individuals are in their midst, there is not a threat to public safety. Involvement of the Technology Association Governments (TAGs) and streamlining EM judicial policies with the Thailand 4.0 initiative, which integrates public sector, private sector, civil sector, communities, provinces, educational institutions and research institutions, could also greatly improve the technology and implementation methodologies for EM.

At present, the Royal Thai Police and the Department of Probation (DOP) have signed a Memorandum of Understanding (MOU) detailing arrest procedures for individuals who violate their parole (The Royal Thai Police and the Department of Probation, 2017). The procedures outlined in the MOU could be usefully in developing precedent for circumstances in which an EM user might violate the terms of their monitoring. In order for this to happen, the DOC would need to sign an MOU for EM technology with offenders of those in custody. Additionally, the monitoring of EM should be delegated to a specifically formed and trained agency, whose primary purpose is EM monitoring. This need for separate EM personnel is supported by the 2016 research of Tanneekul detailing methods of developing EM technology with offenders in Thailand. In addition to the research precedents and support for the use of EM, there are several laws already in place that can allow the DOC and DOP to adopt EM technology. These laws include the Probation Act of 2016, Section 2, which details power and authority in probation, and Article 14, which empowers DOP personnel to monitor individuals under probation in accordance with court rulings. Therefore, a legal precedent for the adoption of EM technology is already in place.

Conclusion

The prison system is currently facing serious issues of overcrowding and the ability to implement effective rehabilitative programs that prevent recidivism, especially in instances of drug convictions. Electronic Monitoring technology offers a promising solution as an alternative for incarceration for drug offenders and non-violent offenders. Pilot programs and trials with EM technology are needed to fully determine the efficacy and limitations of the technology. Moreover, laws, criteria and procedures for the use of EM must also be clearly articulated before it can fully integrated as a viable solution.

In examining the existing use of EM technology in foreign and Thai legal systems, it was found that EM has the potential for effective use, both from a rehabilitative and recidivism perspective as well as a fiscal standpoint. The use of EM is dependent on the ability and desire of the convicted individual towards rehabilitation in addition to a fully developed procedural system for the use of EM. The government should fund the EM initiative, including all relevant technology and personnel training. However, in the event of an offender's violation of the terms of their EM use, the individual would incur the expenses for damaged or destroyed devices as well as punishment for their actions. For the use of EM in parole cases, the DOP and DOC should be responsible for the coordination and use of the EM system, liaising with the individual's family and community to involve them in monitoring and rehabilitative efforts. EM has the potential to not only mitigate overcrowding in prisons, especially in instances of drug offenders, but also provide an environment for offenders that will more effectively enable their rehabilitation and reintegration into society. EM can also

increase a sense of public safety when individuals are released from prison or on parole, as the public will know that measures have been taken to insure their monitoring.

EM also offers promise not only for low risk drug offenders, but also for the monitoring of high-risk drug dealers, who are flight risks either during trials or while seeking health care in hospitals. For low-risk drug related offenders, EM offers solutions for monitoring offenders for sentences carrier out outside of prisons and for parole. Moreover, EM also improves human rights conditions compared to traditional incarceration.

In order to implement a functional EM program within the Thai correctional system, guidelines need to be clearly delineated for whom and under what conditions drug offenders will have access to electronic monitoring. These guidelines and procedures must consider both the probability of positive outcomes as well as safety concerns. Furthermore, a technological and personnel infrastructure must be established. This includes verifying the reliability of EM technology as well as allocating and training individuals for the specific tasks associated with monitoring EM users.

While the integration of EM would require effort and innovations both practically and procedurally, there are existing legal precedents for electronic monitoring of arrested or convicted individuals in Thailand that would facilitate the integration of a larger EM system. Ultimately, EM has the potential to greatly alleviate serious strains on the Thai prison system overpopulation issue and could serve to significantly improve rehabilitation efforts with drug offenders.

Suggestion

Suggested Policy Changes

1. EM requires coordination between the Department of Corrections and Department of Parole. An interagency team tasked specifically with EM is advisable.
2. Legal guidelines for the conditions and individuals who qualify for EM must be clearly defined as well as the procedures and consequences if individuals violate the terms of their EM.
3. Public relations efforts should be made to educate and engage the public on all aspects, benefits and risks associated with EM.
4. Rules governing EM must be in line with the 2017 Corrections Act and the conditions and ethics it articulates.
5. With drug offenders, the use of EM should be in tandem with randomized drug tests, drug rehabilitation, appropriate treatment, and employment. EM should be used as a tool to facilitate better criminal rehabilitation and reduce risks of recidivism.
6. The cost of developing an EM program should be overseen by the state, with the potential for individuals or their families to contribute to device cost, which may in turn lessen the risk of device destruction or violations, by increasing personal investment.
7. The implementation of EM should be seen as apart of Thailand's 4.0 policy initiative and as a means to improve efficiency and efficacy in the criminal justice system.

Logistical Suggestions

1. EM requires defined criteria and procedures, with measures to prevent offenders from escaping or technological failures.
2. Training is needed for personnel dealing with EM.
3. Public and private sector education on EM is needed in addition to consultation with human rights organizations to affirm the ethics of the program.
4. The EM technology must itself be improved for more reliable, functioning devices.
5. Interagency collaboration and liaising are needed between the Ministry of Justice and the Departments of Correction and Parole.

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