The Influence of Radio in Enhancing Farmers' Perceptual Situation in Problem Solving towards Insufficient Information Delivery

IDRIS ISMAIL
ROSIDAYU SABRAN
MOHD YAHYA MOHAMED ARIFFIN
Universiti Sains Islam Malaysia

ABSTRACT

In Agricultural Extension Services (AES), radio plays a role in situational problems like insufficient information delivery. Radio not only helps farmers in acquiring information, but also creates a tendency for farmers to deal with informational interaction and to stay connected with the problem. For that reason, under structural governance reforms such as decentralisation, radio is expected to have an influence on farmers' actual perception and opinion in minimising the problem when used in the AES informational delivery process. Drawing upon the Situational Theory Problem Solving (STOPS), this study seeks to determine the role of radio in problem solving (RIPS) on the perceptual situation variables which include problem recognition, constraint recognition, involvement recognition, and referent criterion towards solving insufficient information delivery. A total of 400 farmers within AES or the "Rice Bowl" area of Northern Malaysia participated in answering the questionnaire. Data was analysed using the Structural Equation Modelling (SEM). The findings reveal that RIPS plays an important role in influencing farmers' problem recognition, involvement recognition, and referent criterion apart from reducing their constraint. As a result, all of the four hypothesised relationships proposed in the study's conceptual model were significant and supported. Hence, RIPS can now be considered as a joint element in public communication strategy to deal and solve insufficient information delivery for Malaysia's AES.

Keywords: *Radio in Problem Solving (RIPS), Situational Theory of Problem Solving (STOPS), insufficient information delivery, Agricultural Extension Services (AES), farmers.*

INTRODUCTION

The information delivery process in Agricultural Extension Services (AES) is not only meant for farmers' easy access. Demiryuruk (2010) considers dealing with situational problems like insufficient information delivery a major concern among farmers, while to Adebayo and Oladele (2012), it is an essential factor in AES practice. In this regard, Martini, Roshetko and Paramita (2016) suggest mass media for effective informational process between AES and farmers. The AES informational delivery strategy mandates that farmers need to have the latest and most useful information best suited with their farming business (Ansari & Sunetha, 2014). Thus, it is important for farmers to leverage on mass media such as the radio in order to create a tendency for them to deal with informational interaction and be connected to the situational problem in AES.

The radio has been acclaimed to be the most widespread, trusted mass media (Kakade, 2013). It further offers information access and enhances behavioural tendency in AES-based situations (Mittal & Mehar, 2016). In situational problems like insufficient information delivery, apart from its persistent role in helping farmers acquire information, the radio is also highly relied upon as an important mass media that augments farmers' awareness and connectedness with AES developments (Chapman, Blench, Kranjac-Berisavljevic & Zakariah,

2003). As such, the radio should offer ways for effective information delivery interactions meant to replace informational diffusion and technological approach of the AES which have been in most cases an emphasis on centralised informational process. Therefore, decentralisation is seen as the way forward (McQuail, 2010).

Similarly, in the context of Malaysian AES, radio influences farmers' attitudes and makes them actively aware and interact with agricultural information programmes (Md Salleh, 2008). Although technological tools can certainly facilitate the AES informational process, these media must not be viewed and taken as the replacement for radio as AES mass media (Ahmad Fahmi, Rosli, & Mohd Khairie, 2016). Generally, studies have provided empirical evidence that if radio is used in the AES informational delivery process, it is expected to have an influence on farmers' actual perception and opinion in minimising the problem. In line with this view, this study expects the radio to have an influence on farmers' perceptual situation in problem solving. It is therefore appropriate to put forward the following research question: Does RIPS influence farmers' perceptual situation in solving insufficient information delivery problem?

Objective
This study argues that the responses of Malaysian paddy farmers can be shaped through the intervention of RIPS within AES situational problem, specifically the problem of insufficient information delivery. This study aims to determine the role of RIPS on perceptual situation variables which are problem recognition, constraint recognition, involvement recognition, and referent criterion based on the Situational Theory of Problem Solving (STOPS).

LITERATURE REVIEW

Radio in Problem Solving (RIPS)
In describing the relationship between information needs and information delivery, Hepworth (2004) explains that understanding the important "characteristics of individual's involved in the "interaction" with media used is crucial in order to respond to the information needs of an individual in a problematic situation." Hence, the use of mass media including the radio is vital (Monge & Contractor, 2003). The radio serves as a platform for farmers to interact and share information on their expertise. Thus, AES informational situations communicated via the radio are able to trigger farmers' concerns as an effect of their raised awareness on the problems.

The role of radio in the context of insufficient information delivery has been further empirically supported in research on developing countries. Radio has been used to obtain sufficient information reach in rural areas as part of promoting agricultural development, particularly work to deliver real time and quick information (Mohammad Reza & Hassan, 2010). In addition, it is considered appropriate for farmers as it is often simpler, easier and requires less resources to use (Kakade, 2013). Likewise in Malaysia, published studies have consistently argued over the role of conventional media, namely radio and television, as the most powerful mass media within the agriculture world, especially in AES (Salleh & Kamolrat, 2003; Md Salleh, 2008; Md Salleh, Hayrol Azril, Muhamad Sham & Nor Sabila, 2010; Md Salleh, Sulaiman, Hayrol Azril, Mohd Shahwahid, Bahaman, Asnarulkhadi & Siti Aisyah, 2011). Radio has been especially viewed as significantly heightening farmers' awareness on agricultural information programmes and processes (Mohammad Reza & Hassan, 2010).

Moreover, in Malaysian AES setting, Md Salleh et al. (2010) pointed out the significance of radio in disseminating information which has resulted in AES-reserved information slots in radio-based agricultural programmes for farmers' latest information access. In fact, radio in Malaysia was established in conjunction with the Development and Agriculture Service (DAS) way back during the emergency period of 1948-1960, responsible for rural developments meant to provide the public with entertainment and information. The radio acts as a medium to connect Malaysia's rural populations, including farmers who are linked to any government development projects on agricultural matters (Md Salleh, 2008). For that reason, this study was renewed and readjusted its focus on radio in addressing AES informational delivery as a newer arrangement in the field. This new line of thinking has consequences for how AES and farmers should approach the radio in AES context to streamline between the information process and farmers' perceptual situation.

Drawing from the above review, it is clear that both researchers and practitioners acknowledge the rationale for using radio in AES which came from an understanding that radio is an excellent, cost-effective means of sharing knowledge, building awareness, facilitating interaction, and supporting farmers' opinion related to information delivery. It is generally agreed that radio usage not only serves to deliver information, but also covers farmers' interactions in AES-based situations. Md Salleh et al. (2010) and Md Salleh et al. (2011) contend that the radio still maintains its potential as the major mass media for AES information delivery process. It thus creates a higher probability for Malaysian farmers to engage in real information delivery situations. Zoheir et al. (2012) suggest that it should provide an opportunity to better understand the use of mass media like the radio to fulfill other needs of farmers, especially radio usage and farmers' behaviour (Muhammad Asif & Mumtaz, 2013), such as problem solving.

With the same token, in enhancing farmers' information behaviour, RIPS should be taken as part of the tool in helping farmers to deal with AES problems. Therefore, the influence of RIPS on farmers' perceptual situation variables towards insufficient information delivery needs to be addressed. To achieve this objective, this study draws upon Kim and Grunig's (2011) Situational Problem of Solving (STOPS). Aside from considering the public's perception towards certain issues, scholars contend that other possible significant antecedent factors of the independent variables should also be looked into (Turpin, 2013). Thus, selected antecedent factors are introduced and suggested to influence the perceptual situation variables towards the situational problem, hence better enhancing STOPS' theoretical virtue.

Situational Theory of Problem Solving (STOPS)
Kim and Grunig (2011) introduced STOPS to further extend the theoretical lens of Situational Theory of Publics (STP) proposed by Grunig (1968). The earlier STP was developed to explain and predict the public's situational perception of their own situational problem. Hence, STP explains the public's mixed perception which consists of problem recognition, constraint recognition, and level of involvement that determine the public's response towards a problem. STOPS, on the other hand, redefine and reinstate the variable of referent criterion as another factor which explains the public's situational perception.

This brings an important point to consider, in which whether this approach attracts farmers to share their opinions and whether their perceptual situational belief can be enhanced through radio use. Furthermore, does it provide a platform for farmers' active inter-

action that promotes greater upward approach? This moves along with radio in AES behavioural approach, which assumes its role as one of the elements used to connect farmers with information-based problems. It effectively shows that the information delivery process in AES not only deals with the planning and management to overcome insufficient information delivery, but also works hand in hand with the choice of mass media in order to bring about desired changes in farmers' behaviour and their informational situation in farming (Leeuwis & Aarts, 2011). In a study employing STOPS, Ni and Kim (2009) indicated that the public in identified situational problem are well-versed with related information delivered through their preferred methods.

STOPS has been utilised by many researchers, targeting the concept of public relations in addressing "Publics" in situational problems (Kim & Ni, 2013). The theory has been used to examine the predictive power of STOPS-based variables in the public's situational problems and improve their problem-solving ability through newly-introduced concepts (Ni & Kim, 2009). Thus, STOPS became a more general theory of communication and "problem solving." Research focusing on the same concept introduced the notion of online communication (Kim & Viber, 2012) and interpersonal communication (Choi & Kim, 2015) towards their focused situational problem. Therefore, this study introduces the novel idea of RIPS in an attempt to predict farmers' perceptual situation towards insufficient information delivery within a situational problem in AES. This serves to bridge the gap of knowledge within STOPS conceptually and empirically.

RIPS on Perceptual Situation Variables and Hyphotheses
As a new concept, RIPS is assumed as a relevant mass media to influence farmers' interaction within AES in their effort to gather information and minimise their informational problem (Christoplos, 2010). This can then influence them to situationally think about the problem. Specifically, farmers' awareness, interest and positive attitude can be developed through mass media such as radio (Md Salleh et al., 2011). Chapman et al. (2003) specifically found that radio usage can be extended to connect farmers with problems, concerns, and developmental needs in AES. This study argues that farmers' recognition towards insufficient information delivery can be influenced by RIPS. Generally, people tend to recognise the problem when they are able to perceive it through the use of the right channel that is well-suited with the identified problem (Kim & Grunig, 2011). Thus, this study proposes that.

H1 :   The higher usage of RIPS, the higher level of farmers' problem recognition.

This study is concerned over the limited availability and usage of radio which limits the farmers' access and that its usefulness can be connected to insufficient information delivery problem. Che Su and Fauziah (2015) argue that the main factor which constrains female farmers' participation in village agriculture is the lack of access to sufficient knowledge and information. This study believes that this problem could stem from the lack of information access from the right mass media, in particular the radio. This is due to the fact that in situations where mass media such as the radio are supposed to simultaneously help farmers gain information from AES (Demiryurek, 2006), such was found not accessible by some farmers, especially those in remote areas in which infrastructure and utilities are not efficient and sufficient enough (Mwalukasa, 2013). It makes sense for STOPS to posit that the public may be constrained in solving their problems at certain times due to the information constraint (Kim &

Grunig, 2011). In the same vein, this study believes that RIPS can help farmers overcome the problem of limited information, which further influences their constraint to recognise and solve insufficient information delivery. Thus, this study proposes that.

H2 :   The higher usage of RIPS, the lower level of farmers' constraint recognition.

Apart from triggering farmers' recognition of insufficient information delivery, RIPS also helps farmers to connect and jointly solve the problem. That holds true, as farmers have been found ready to share their perception during the information gathering process which later allows harmonious efforts between the AES institution and farmers in problem-solving (Siti Azizah & Kliwon Hidayat, 2014). Christoplos (2010) suggests that farmers' access to AES information and technologies can be achieved by facilitating their interaction and involvement with AES, and the radio could assist their participation in problematic situations. Thus, this study views RIPS as an influence on farmers' personal opinion. As apposed by Grunig, (1997: 10), to connect to the problem is "the extent people connect themselves." Therefore, this study contends that.

H3 :   The higher usage of RIPS, the higher farmers' involvement recognition.

Zakaria and Nagata (2010) pointed out that despite having options of communication means, radio is still maintained as a preferred tool and may likely enhance farmers' interpersonal communication, which in turn will influence their information behaviour in dealing with the informational process of AES. In line with STOPS, Kim and Grunig (2011) stated that communicative actions take on numerous forms such as learning, giving, and selecting various information about the problem which starts from one's existing knowledge and triggers their effort to do something about it. This study argues that RIPS allows farmers to be informed about insufficient information delivery which will subsequently influence their information activeness.

H4 :   The higher usage of RIPS, the higher farmers' referent criterion.

Realising the importance of radio to farmers and the correlation between radio and information behaviour, it makes sense to include the usage of RIPS in the public communication perspective by exploring the relationships between the perceptual situation variables in the STOPS model. Therefore, this study proposes a conceptual framework which addresses the concept of RIPS as an antecedent variables to the STOPS model as an attempt to further understand farmers' response towards the AES problem of insufficient information delivery.
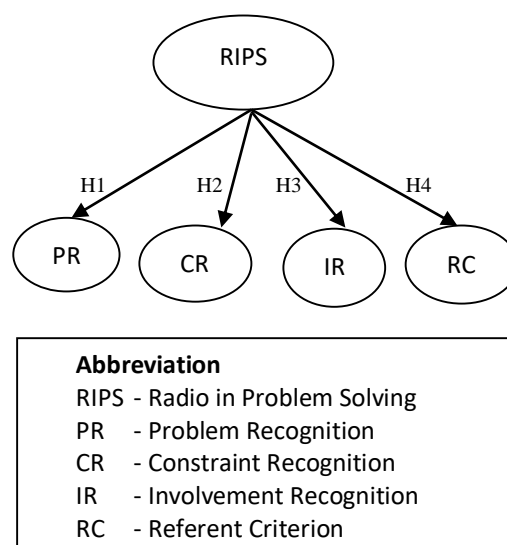
Figure 1: Proposed conceptual framework

METHODOLOGY

With the belief that STOPS mainly explains public's perception through statistical findings, this study applies the quantitative measure in determining RIPS on farmers' response in solving the issue of insufficient information delivery. The participants in this study were 400 farmers living in the AES area under MADA administration in Kedah, Malaysia which maintains 57,635 registered farmers. They were recruited according to four regions (Perlis=68, Jitra=136, Pendang=96, and Sarang Semut=100) through a stratified random sampling of farmers in extracting information-rich data from a diverse subject pool. Leary (1995) indicates that a stratified random sample will typically reflect the characteristics of the population as a whole and therefore, meaningful data will be gathered. A self-administered survey was conducted in October, 2018 to test the hypotheses. Specifically, a self-administered survey ensures a high response rate, gives the benefits of a degree of personal contact, targets the most appropriate sample precisely, and overcomes the sample bias problem, if any (Collis & Hussey, 2003).

Demographic of Respondents
93.8 percent (N=375) of the farmers were male, and 6.3 percent (N=25) were female. The ages ranged from 30 to 70 years old and above, with 11.5 percent (N=46) between 30 and 40 years, 30.2 percent (N=121) between 41 and 50, 34.0 percent (N=136) between 51 and 60, 20.8 percent (N=83) between 61 and 70, and 3.5 percent (N=14) 70 years and above. A majority of 74.3 percent (N=297) were those with secondary academic qualification, 2.8 percent (N=11) without qualification, 17.8 percent (N=71) were of primary education, and higher qualification represented 5.4 percent (N=21). The respondents had been working in the paddy business for a substantive period with a majority of farmers, or 24.3 percent (N=97), having between 16 and 20 years' worth of experience. The majority of them were living in areas below 2 Ha (60.8 percent, N=279). In the ethnic composition, a majority of the farmers were Malay (98.3 percent, N=393), while 1.3 percent (N=5) and 0.5 percent (N=2) were Chinese and of other races.

Measures

After introducing the problem, the participants were instructed to answer the questionnaire. The participants were asked to assess the items based on the 10-point descending scale of agreement from (1) "strongly disagree" to (10) "strongly agree." Notably, the operational definitions and items in the questionnaire for RIPS in this study were built and developed through a review of literature in the same field concerning the role of radio in AES agriculture development and specifically in AES situational problem. The measure consisted seven (7) items measuring farmers' use and perception of radio in day-to-day context of AES concerns to solve problems. RIPS is an added concept within STOPS utilities in providing help to solve problems. Prior to that, the theoretical framework of STOPS by Kim and Grunig (2011) under-laid the questionnaire that captured all the information needed to answer the research questions. The recognition of insufficient information delivery as a problem faced by the public (i.e. farmers) was measured using five (5) items. Six (6) items were used to measure the constraint recognition of the public or farmers. Another five (5) items were related to public involvement recognition and six (6) items measured public referent criterion on the situational problem.

Analysis

According to Bhasah (2007), data analysis is actually based on hypotheses or research questions set by researchers. This study's data analysis is thus related to the research hypotheses which were based on the research objectives. Scores from the new concept introduced provide values on the items concerning the respondents' level of radio use in problem solving (RIPS). Thus, the analysis employed and the perceptual situation varibales of STOPS were tested with the addition of RIPS as an antecedent variable to the original model. Next, Structural Equation Modelling (SEM) analysis using AMOS programme was conducted to examine H1 to H4.

The structural equation analysis in this study was based on a two-step approach as proposed by Hair, Black, Babin, Anderson and Tatham (2006). The first stage of the two-step approach started with the measurement model as a CFA model (Confirmatory Factor Analysis) which determined its suitability to the data (goodness of fit). The second step was to model these constructs into the structural model which was then estimated and analysed to see the overall fit of the model, and to evaluate its structural model. At this stage, the structural model's validity was studied using the same criteria as the measurement model. When models achieved a reasonable model fit, the paths were interpreted to evaluate the hypotheses and research questions.

RESULTS

Reliability Analysis

Reliability of the measures in this study was first assessed using Cronbach's (1951) method to measure the internal consistency. Kim and Grunig (2011) used the Cronbach alpha to measure the reliability of the questionnaire in STOPS. The Cronbach's Alpha must display a high degree of internal reliability with value greater than the minimum 0.70 (Hair et al. 2010). The findings demonstrate that all values were more than 0.7. In addition, factor analysis (EFA) was performed and the result shows all items loaded more than 0.5. Thus, the survey instrument was reliable to measure all the constructs and free from random error (Zainudin, 2015). These items were then used to further proceed with the structural equation modelling analysis.

Table 1: Reliability Analysis

Construct	Items	Cronbach Alpha
RIPS	7	0.951
Problem Recognition	5	0.865
Constraint Recognition	6	0.839
Involvement Recognition	5	0.836
Referent Criterion	6	0.859

Table 2: KMO and Bartletts' Test

Construct	KMO	Bartlett's Test of Sphericity	Factor Loading
RIPS	0.954	3501.859	0.795– 0.858
Problem Recognition	0.812	963.165	0.777- 0.844
Constraint Recogntion	0.847	849.928	0.672– 0.798
Involvement Recognition	0.810	737.640	0.759– 0.805
Referent Criterion	0.865	957.382	0.710- 0.830

Structural Equation Model (SEM) Analysis

The investigation of Malaysian farmers' perspectives towards insufficient information delivery based on the proposed relationships within the context of STOPS, which is an attempt to see the impact of the newly introduced concept of RIPS in combination to STOPS, seeks to answer the research question (i.e., Does radio usage affect farmers' response in problem solving towards insufficient information delivery?) and fulfill the objectives of the study in determining whether radio usage affects the farmers in solving the matter of insufficient information delivery.

The evaluation of the structural model involves the examination of fitness index as per conducted in the first stage of the research model measurement (CFA). This was carried out as per discussed above to ensure that the goodness of fit represented good value for fitness indexes, obtaining the accepted estimation of path coefficient, and eliminating multicollinearity. It was found that the index values correspond between the model and research data, in which the RMSEA value of 0.073 was less than 0.08 (see Byrne, 2001). The CFI value of 0.94, on the other hand, corresponds with the value set by Bentler (1990) (i.e. greater than 0.90). For the value of Chi Square or Degree of Freedom (ChiSq), the value of 2.89 was less than 5.0 (see Marsh & Hocevar, 1985). In other words, these values correspond to the structural equation model of the study. Thus, all the conditions of the fitness indexes were achieved.

The hypotheses proposed dictate the relationship between the variables under consideration. To enable that, structural model testing was employed to test the hypotheses posed which represent the new concept to the original STOPS to include H1 to H4. As discussed earlier, it was shown that all paths were significant. H1 proposes that RIPS recognise insufficient information delivery in AES as a problem, in which a higher problem recognition among farmers shows the higher presence of radio usage in helping famers to solve the problem. The findings revealed a significant positive effect, β .274 (p< .001). This result is consistent with a previous study by Chapman et al. (2003), and that the radio helps create awareness, thus influencing information behaviour (Kakade, 2013). This suggests that AES should pay attention to the use of radio, as it encourages farmers to identify the AES situational problem and to deal with the problem of insufficient information delivery.

H2 further investigates the effect of RIPS on the perception of constraint recognition, in which the lower constraint perceived among farmers shows a higher presence of radio usage in solving the problem. The analysis found a significant negative effect from the relationship on constraint recognition, β -0.66 (p < .001). Thus, it shows that RIPS also plays an important role in reducing constraints. The farmers can overcome constraint recognition that can limit their ability to act on this issue of insufficient information delivery in AES.

Moreover, H3 proposes the effect of RIPS and involvement recognition. Consequently, a higher involvement of farmers in the problem shows the presence of radio usage amongst them in solving the matter of insufficient information delivery in AES. The finding shows a significant positive effect from the relationship, β.598 (p < .001). At the same time, farmers' involvement can also be ascertained, where RIPS help to enhance their engagement in solving this problem. In other words, the farmers were actively taking part in dealing with the problem that concerns them most through the higher usage of radio.

Finally, H4 proposes the effect between RIPS on the referent criterion, in which a higher referent criterion related to radio use observed among farmers shows a higher possibility of RIPS in helping them deal with the situational problem. The analysis found a significant positive effect from the relationship, β .174 (p <.001). Thus, RIPS can add value to the existing referent criterion of this problem and farmers can further reveal their experience and knowledge about this problem which can ultimately trigger their perceptual situation. It appears that farmers opt for the radio in their own farming context and this is consistent with Ihm, Pena, Cooper, Atouba, Shumate, Bello and Pittendrigh's (2015) findings. Apart from information from AES, the farmers clearly selected the available mass media or radio which can help increase their knowledge and shape their perception.

Table 3: The Regression Path Coefficients and its significance value of the RIPS Model

Hx	Construct		Construct	Estimate	SE	CR	P	Result
H1	PR	<----	RIPS	.274	.035	7.840	***	Significant
H2	CR	<----	RIPS	-0.66	.019	-8.736	***	Significant
H3	IR	<----	RIPS	.598	.049	12.091	***	Significant
H4	RC	<----	RIPS	.174	.035	4.971	***	Significant

Additionally, Zainuddin (2015) pointed out that R^2 is used to further analyse the substantial relationship between the variables as proposed by the study's structural model. By looking at this value, one can conclude that the model relationship between the variables is either weak, moderate, or substantial. Cohen (1988) states an R^2 square value above 0.26 as substantial. In this study, the R^2 square values indicate that RIPS predicts a variant of 0.27 on problem recognition, R^2 0.22 on constraint recognition, R^2 0.50 on involvement recognition, and R^2 0.23 on referent criterion. This therefore shows that the four relationships are at the moderate to the substantial level (Cohen, 1988).

Finally, the structural model testing of H1-H4 displays all of the structural relationships between the RIPS models and the perceptual situation variables of STOPS with their path coefficients and significance level. It also displays RIPS in the STOPS model which can then be considered as the final structural model for this study.
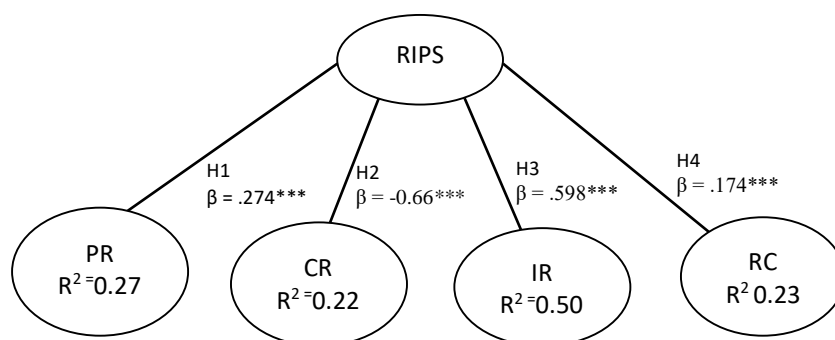
Figure 2: Final structural model

DISCUSSION

RIPS is a new concept introduced in this study, as radio is found pertinent and relevant in AES environment to facilitate interactions between AES and to help farmers' information behaviour regarding an informational problem. Thus, the original model of STOPS was expanded by adding RIPS as an antecedent to the perceptual situation variables in STOPS. The overall finding appears consistent with what have been contended by scholars, in that the newly introduced concept tested within STOPS utilities of perceptual situation variables will better enhance the STOPS theoretical power (Turpin, 2013), and will further influence the perceptual situation variables in viewing the problem (Sha ,2008).

Moving along with that concept, the radio has been consistently found as having great potential that may influence farmers' information behaviour in the AES informational process (Muhammad Asif & Mumtaz, 2013). Studies have also supported the idea that radio enables the concept of decentralisation of AES through the interactive agriculture programme. It encourages communication and immediate reaction from farmers to look at the insufficient information delivery in AES that affects their lives and cultivation activities.

Scholars support the idea that RIPS is able to explain problem recognition. Farmers use the radio in various ways to search for information and solve problems as it enables them to connect with the AES institution (Seidu, Andani, & Abdul-Malik, 2011). In this case, RIPS has made it possible for farmers to increase their degree of problem recognition in an AES situational problem. Specifically, the radio is still significant for Malaysian farmers to be informed about a potential problem (Ahmad Fahmi et al., 2016). The contribution of RIPS in reducing farmers' constraint shows a great consistent negative relationship as proposed in the original model of STOPS. This is undoubtedly a great contribution to the new STOPS model. It shows that the communication sources assist Malaysian farmers in their behavioural control related to their perception about farming difficulties. This will subsequently allow farmers to improve their information activeness in communicating about the problem (Kakade, 2013).

RIPS can also facilitate the involvement of farmers as an active public and to share their experience related to the problem through their access to radio. A survey by FAO (2014) indicated that radio is the only medium which can reach farmers at the same time regardless of the geographical distance. RIPS contend that farmers perceive involvement recognition towards solving insufficient information delivery in AES by establishing a two-way communication. This strongly corresponds with Joel and Lucy's finding (2015), in which farmers' feedback through aired programmes makes the programme reciprocate to farmers' opinion that covers

a huge listenership. In other words, RIPS potentially help farmers curb the insufficient information delivery problem regardless of their location gap, as well as illiteracy and language barrier affecting them personally, their family and life.

The basis of referent criteria is determined by the previous situational factor, primarily from individual social contacts of past behaviour related to the same situation (Grunig, 1968). In AES situation, however, radio and interaction have made individuals to further improve their capabilities, existing knowledge and information in coping with the problem. Therefore, the readiness of farmers in solving insufficient information delivery problem obviously relies on their knowledge and effort which can now be extended with the most appropriate mass media like RIPS that can allow them to be informed and connected to the situational problem. Similarly, previous empirical research revealed that radio has significantly further improved what people already have, hence guiding them to deal with the informational situation (Mohd Reza & Md Salleh, 2011).

The empirical analysis of path coefficients between RIPS and perceptual situation variables generally reveals RIPS as another justification for a new concept to the STOPS model. In accordance to previous empirical studies that utilised STOPS, Kim and Vibber (2012) proposed public communication sources such as modern communication. According to Choi and Kim (2015), interpersonal communication significantly affects the public's perceptual situation towards the identified problem. This shows the developmental role of RIPS as credible in enhancing farmers' information needs as extensively supported by scholars like Chapman et al. (2003), Kakade (2013) and Md Salleh et al. (2011) in terms of insufficient information delivery.

Thus, RIPS as an antecedent factor to the perceptual situation of STOPS is seen as a desirable way to help connect farmers in solving insufficient information delivery problem. The radio is seen as a mass media to further influence farmers so that they can be eager to seek more knowledge and information about the problem. This is strongly supported by STOPS's original proposition, in which generally, the publics seek information as they become aware and recognise perceptual situation factors that connect them to solve a problem (Kim & Grunig, 2011). Therefore, this serves to show the readiness of farmers towards solving insufficient information delivery as an outcome between RIPS and perceptual situation variables, problem recognition, involvement recognition and constraint recognition. Theoretically, this research extends RIPS as a new factor in STOPS that goes beyond only acquiring information but problem solving by highlighting farmers' situational interaction via the radio. In addition, the study has proposed and provided empirical evidence on RIPS in insufficient information delivery interactions, which causes the farmers' perceptual situation, eventually leading to their actual perception about the problem and their resulting action. Hence, this study is the first attempt to develop items to measure the proposed constructs of RIPS in the AES situation context and tested within the STOPS utilities.

Practically, AES needs to take into account the role of RIPS as well as to ensure its function in contributing towards farmers' ability in solving their agricultural problems. This is due to the idea that RIPS as a joint element can be used as part of the method in dealing and solving insufficient information delivery effort for the entire Malaysian AES.

Although this study has significantly contributed to our understanding of farmers' perceptual situation in problem solving towards insufficient information delivery, there are some limitations that need to be highlighted and taken into account for future research. As a public relations theory concerning the public, a new concept tested within STOPS utilities can be

considered as a new antecedent variable in explaining the public's actual perception and behaviour in problem solving on their identified situational problem.

Further, this study takes a snapshot of problem solvers' perceptual situation within the communication perspective. It limits problem solving as being influenced by RIPS on farmers' perceptual situation which include their recognition of the problem, recognition of constraints, recognition of involvement, and referent criterion. Future research should introduce other concepts such as combining various methods of communicating information in explaining public perspectives during a problematic situation.

In light of the limitations discussed, this study would suggest the same conceptual take could be replicated to include the actual opinion of other stakeholders in AES such as AES agents or suppliers in an attempt to gain a wider picture of the perception and behaviour of the public in AES environment towards insufficient information delivery. AES agents and suppliers may also have their own perceptions or factors that can contribute to the solution of insufficient information delivery.

CONCLUSION

This study has laid out the conclusion of the research findings by discussing on farmers' perceptual situation towards insufficient information delivery, thus a contribution of RIPS. This study has also introduced the role of RIPS in explaining a problem concerning AES which confirmed that the hypotheses were supported. The contribution of RIPS was also affirmed, especially in enhancing farmers' level of perceptual situation towards the problem. The findings are encouraging to the AES institution in Malaysia, helping it to plan new strategies that can enhance the role of farmers in helping them to solve their own identified AES informational process and related problems. In addition, the role of RIPS can be incorporated as part of AES effort to encourage farmers to connect with the information delivery system.

BIODATA

Idris Bin Ismail is a PhD candidate in Communication (Public Communication) at the Faculty of Leadership and Management, University Sains Islam Malaysia (USIM). His interest includes Public Relations Theory, Organisational Communication and its Public, Public Segmentation and Behaviour, Media and Public Information behaviour and Communication for problem solving. Email: idriscruise@yahoo.com

Rosidayu Sabran is a senior lecturer at Communication Program, Universiti Sains Islam Malaysia (USIM). Her research interest includes political economy of media, media economics, media organisation and talent management. Currently she involves in research related to human management for creative industries and campus radio. Email: rosidayu@usim.edu.my

Dr Mohd Yahya Bin Mohamed Ariffin is a Professor at the faculty of Leadership and Management, Universiti Sains Islam Malaysia (USIM). He obtained his PhD from University Malaya. His research interest includes Public Relations and Journalism. He has published tremendous articles and books in this area. Email: mohdyms@usim.edu.my

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