

Developing and Validating the Extension Equity Scale: A User-Centred Evaluation Model for a Public Health Extension Program

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ABSTRACT This paper aims to develop and validate a measurement scale for evaluating health extension programs using an equity-based approach in the Indonesian context. This quantitative study involved two survey phases with the first in Jakarta and Makassar with 112 respondents to test validity and reliability, and the second in five major cities (Medan, Jakarta, Pontianak, Surabaya, and Makassar) with 275 respondents to test the goodness-of-fit model. The analysis employed item-to-total correlation, factor analysis, Cronbach's alpha, and Structural Equation Modelling (SEM). The study introduces and validates the Extension Equity Scale (EES), a user-centred evaluation framework designed to capture the multidimensional nature of equity in health extension programs. The model comprises eight core dimensions of awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and word-of-mouth (WoM). It is recommended that the performance of the extension program be assessed through a comprehensive evaluation that incorporates input and feedback from its users.

INTRODUCTION

An extension program is a strategic tool for transferring knowledge, shaping behaviour, and increasing community participation in various development sectors. One of the most impactful types of extension programs is health extension, which plays an important role in a country to support public health (Sherrill et al. 2025). Moreover, health extension plays a role as a bridge between academic and community knowledge and expertise to improve the health of patients and the community as a whole (Kaufman et al. 2019). Furthermore, it plays a much larger role in health than the healthcare system because health extension can reach and address social factors that cause health problems, such as lack of health education, limited access to clean water or healthy food (Kaufman et al. 2019).

Evaluation is a critical component in implementing health-extension or community-based health programs, because it enables assessment of both their effectiveness and broader impact (Tirunch et al. 2024). In the context of health extension, suc-

cess is not solely determined by the number of activities carried out, but by how well the program addresses the specific health challenges faced by the community (Kaufman et al. 2019). A robust evaluation should establish whether the health-promotion messages are clearly understood, whether delivery methods and materials suit the audience's characteristics, and whether participants regard the programme as equitable, relevant and advantageous (Chandrashekhar and Thakur 2022).

Although evaluation is essential, in real-world settings its effective application remains hampered by inconsistent methods and poor standardisation (Lim et al. 2024). Many extension agents encounter difficulties in implementing rigorous evaluations (Diaz et al. 2019). As a result, in many cases, evaluation is viewed as merely a formality in the reporting process rather than a tool for improving program outcomes (Naranjo-Escobar 2022). From this condition, it can be understood that extension program evaluation has become a critical issue in extension work (Diaz et al. 2019).

Although researchers have proposed a variety of evaluation techniques, many practitioners still perceive them as too complex. Consequently, there is a growing demand for streamlined,

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systematic tools that can reliably capture the impact of extension-type programmes (Lim et al. 2024). Studies have pointed to persistent issues with trustworthiness and methodological rigour in many evaluation approaches, pointing toward the imperative to strengthen assessment tools (De Santis et al. 2022). A continuing challenge is deciding which indicators to measure so as to meaningfully capture programme outcomes and impacts (Heine et al. 2023). More recently, evaluation practice has increasingly moved away from mere administrative or technical output reporting and toward approaches that are user-or client-centred, focusing on stakeholder experiences and relevance (Lim et al. 2024). This shift highlights the importance of developing an evaluation framework that is more responsive to the needs and perspectives of program beneficiaries. In other words, it is important to develop a user-centred evaluation approach for extension programs.

A user-centred extension evaluation can be approached through the concept of equity. This concept refers to the equity theory developed by Adams (1965), which states that individuals will feel satisfied and motivated when they perceive value in both treatment and outcomes received. Although equity theory was introduced several decades ago, it remains highly relevant and widely applied, for example Chen and Lee (2022), Prieto et al. (2022), and Anh (2022). The conceptualization directly applies Adams' (1965) equity theory to extension contexts, positing that program sustainability depends on users' perceived value between their participation efforts and health outcomes received. Furthermore, equity can be defined as a person's perception of the value of what they receive (Aaker 1991; Keller 1993). In the context of extension, this reflects the value of an extension program based on the users' perspective. This perspective is critical for developing evaluation frameworks that genuinely reflect beneficiaries' experiences and expectations.

Research Gap and Objective

Studies on equity in extension, including in the health sector, are still very limited. To the best of the researchers' knowledge, there has been little research that explicitly develops and

validates measurement tools to evaluate extension programs based on the equity approach. This approach is highly relevant because extension is a form of social interaction between service providers and beneficiaries, in which the perception of value becomes a key factor in encouraging engagement and the sustainability of community participation. Some studies have attempted to assess equity aspects in the context of public services in general (McDermott et al. 2020), but to date there is no measurement scale specifically designed for extension programs, especially in the public health sector. This condition indicates a gap in the academic literature, as well as an opportunity to develop a more inclusive and user-participatory evaluation instrument.

To address this gap, the present study seeks to develop and validate the Extension Equity Scale (EES) as a new instrument for evaluating the effectiveness of public health extension programs, emphasising the viewpoints of program beneficiaries. EES is modelled as a second-order construct. It is assessed across multiple dimensions: awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and word-of-mouth (WoM). In other words, this study seeks to determine the key dimensions underlying the EES. The research question of this paper is towards understanding the dimensions of extension equity that should be used to conceptualise and measure ESS for public health extension programs.

METHODOLOGY

Research Framework

This study employs a quantitative research approach using a survey method to collect primary data from respondents. The survey design allows for the systematic measurement of participants' perceptions and evaluations related to the research variables, enabling statistical analysis to test the proposed relationships and validate the developed model. Further, the research framework of this study is based on a user-centred evaluation approach and equity theory (Adams 1965). In the context of health education programs, community perceptions as service users are crucial to program success. The evaluation should not only focus on ad-

ministrative achievements or institutional indicators but also reflect user perceptions toward the equity of health extension. This approach aligns with the principles of user-centred evaluation, which places the community at the centre of the assessment process (Ortiz-Crespo et al. 2021).

The phrase extension equity is adopted from equity theory, which posits that a relationship or exchange between two parties is considered valuable if the input provided is proportional to the output or benefits received (Ross and Kapitan 2018). In extension programs, the sponsor or organiser provides input in the form of funds, manpower and other resources, while the community receives benefits in the form of increased knowledge, attitude changes, or behavioural improvements. If the community feels that the benefits outweigh the efforts they expend to participate in the program, then the program is considered to have a high level of extension equity. This will encourage the program's sustainability because it is considered worth continuing.

This concept emphasises that the assessment of success of the program does not solely come from the organisers, but also from the users as the centre of evaluation. Extension programs are primarily aimed at solving community problems (Coutts 1995). Therefore, users' assessment becomes a valid and important indicator. In other words, extension equity must be managed and measured from the users' perspective.

Equity theory is one of the theories that has been widely adopted across various disciplines and has resulted in several derivative concepts such as brand equity (de Oliveira et al. 2023), customer equity (Zhou et al. 2025), interpersonal equity (Dauda 2024), and organisational equity (Kelly et al. 2025). This study develops the concept of extension equity, which is derived from the basic principles of equity theory. In this study, extension equity is defined as the value of an extension program from the users' perspective, measured through eight main dimensions of awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and WoM. The eight dimensions were derived and adapted from existing literature, ensuring their relevance and applicability to the context of extension programs. Specifically, the dimensions include awareness (Aaker 1992; Keller

1993; Pappu et al. 2005; Tong and Hawley 2009; Pinar et al. 2014), knowledge (Keller 1993; Tolba and Hassan 2009; Shuv-Ami 2016), perceived benefit (Keller 1993), perceived quality (Aaker 1992; Keller 1993; Buil et al. 2008; Tong and Hawley 2009; Tolba and Hassan 2009; Pinar et al. 2014; Shuv-Ami 2016), trust (Aaker 1996; Raut et al. 2019; Shen et al. 2018), commitment (Aaker 1991), and WoM (Mourad et al. 2011; Florek 2015).

Similar to other equity concepts such as brand equity (Aaker 1991; Keller 1993), this study also constructs the extension equity model in the form of a hierarchical structure. The most basic dimension is awareness, while the highest is WoM. Based on the study by Chow et al. (2017), although arranged hierarchically, the eight dimensions interact with each other and form an interconnected structure. This means that the formation of extension equity cannot occur instantly, but rather through a gradual process from awareness to generating active behaviour in recommending the program to others. Figure 1 presents the conceptual model of extension equity.

Research Objects

In Indonesia, extension programs have long been an integral part of social development strategies. These programs aim to encourage participatory collective behaviour change, particularly through government health initiatives. One such program is "GERMAS" (*Gerakan Masyarakat Hidup Sehat* or the Citizens Healthy Lifestyle Movement). According to the National Development Planning Agency (Bappenas) Regulation No. 11/2017, GERMAS is a national health extension program that aims to improve citizens' awareness, willingness, and capability to lead a healthier life. It relies on community education through extension and public campaigns to promote physical activity, consumption of fruits and vegetables, and regular health check-ups. This program was selected as the focal point for this study because of its broad reach across various segments of Indonesian society. It has diverse communication channels, and emphasises participation-based behaviour change, making it highly relevant to be evaluated using the equity theory and user-centred evaluation approach.

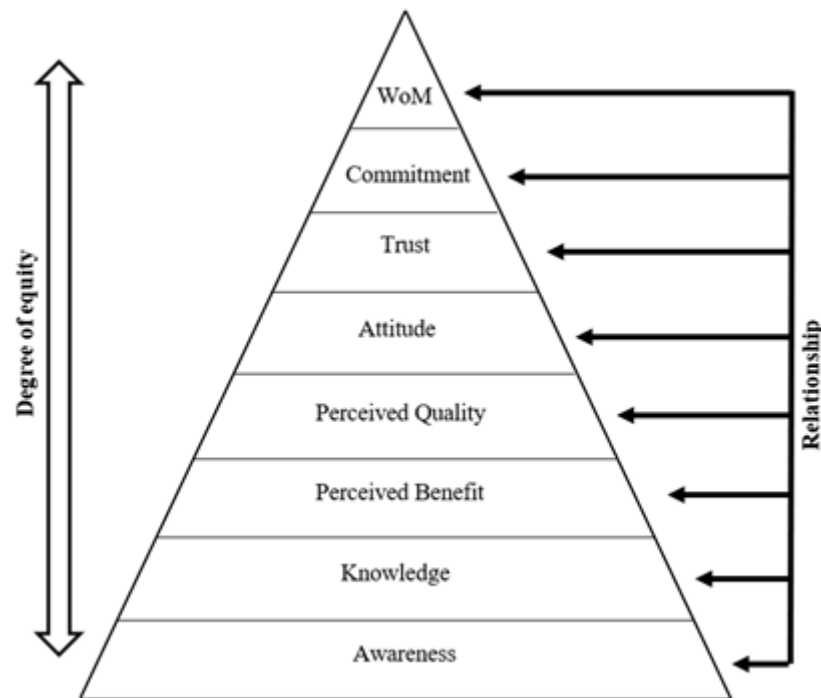


Fig. 1. The hierarchy of the extension equity dimensions

Source: Authors

Variables and Indicators

Referring to this proposed research model, there are eight variables (dimensions) to represent extension equity, which are awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and WoM. Because all variables are latent variables, this research used multiple statement indicators (Diamantopoulos et al. 2012). To ensure the content validity, the indicators are adapted from previous relevant studies. Awareness indicators were obtained from Aaker (1996), Buil et al. (2008), and Pinar et al. (2014). Knowledge indicators were based on Laroche et al. (2010), Pieniak et al. (2010), and Aertsens et al. (2011). The indicators of perceived benefit were obtained from Verbeke (2005). The indicators of perceived quality were based on from Aaker (1996), Pappu et al. (2005), and Buil et al. (2008). Attitude indicators were obtained from Ajzen (2002), Vermeir and Verbeke

(2008), and Amaro and Duarte (2015). The indicators of trust were obtained from Al-Hawari (2011) and Tabrani et al. (2018). Commitment indicators were based on Garbarino and Johnson (1999) and Al-Hawari (2011). The indicators of WoM were based on Florek (2015), Velázquez et al. (2015) and Ahmadi (2019). In total, 26 indicators were used in this research. Each indicator was measured using seven-point Likert scale ranging from “strongly disagree (1)” to “strongly agree (5)”. The indicators are listed in Table 2.

Data Collection

This study conducted two data collection sessions. The first session is a pre-test study, which aims to assess the validity and reliability of the extension equity scale. Meanwhile, the second session is the main study, which aims to test whether the extension equity model meets the goodness-of-fit criteria. In these two ses-

sions, data were collected through a survey using a questionnaire. The population was the entire users of GERMAS. Since the characteristics of the population were unknown, this study chose a convenience sampling method (Stratton 2021). Previous studies that developed models also used this technique (for example, Bakti and Sumaedi 2015; Ramel 2022; Li et al. 2025). The pre-test study gathered data from 112 respondents in two major cities of Jakarta and Makassar, Indonesia. The main study collected data from 275 respondents in five cities, which were Medan, Jakarta, Pontianak, Surabaya, and Makassar. The respondents were all aged 17 and above. Table 1 provides a detailed description of the sample characteristics for the pre-test study and the main study. This study utilised a questionnaire consisting of general questions, which did not pose any risk of physical harm or psychological stress to the participants. In addition, the entire research procedure, including

the ethical approval, was approved by the Faculty of Human Ecology, IPB University.

Data Analysis

The pre-test study used two primary statistical analyses, the item-total correlation and factor analysis to test the validity of the indicators. These two analyses are often used to test the validity of instruments (for example, Hajjar 2018, Ahorsu et al. 2022; Wang et al. 2023). Referring to previous research, the reliability testing was carried out using three types of reliability analysis, namely, Cronbach's Alpha (Izah et al. 2024), Spearman-Brown Coefficient (Dedeli et al. 2014), and Guttman Coefficient (Zhao et al. 2021). On the other side, the main study used the Structural Equation Model (SEM) to assess the goodness-of-fit of the extension equity model. This method has also been used by other researchers, such as Sumaedi et al. (2016), Lamm et al. (2021), and Sun and Rogers (2021).

Table 1: Demographic profile of respondents

Characteristics	Category	Percentage (%)	
		Pre-test study	Main study
Sex	♦ Male	13.4	41.8
	♦ Female	86.6	58.2
Age	♦ 17 - 20 years old	5.4	13.8
	♦ 21 - 30 years old	16.1	24.7
	♦ 31 - 40 years old	37.5	27.3
	♦ 41 - 50 years old	31.2	19.3
	♦ ≥51 years old	9.8	14.9
	♦ Uneducated	0.9	0.4
Education	♦ Primary school	3.6	1.5
	♦ Junior high school	18.8	8
	♦ High school	57.1	77.1
	♦ College diploma/3-year bachelor's degree	5.4	2.9
	♦ 4-year bachelor's degree	11.6	9.5
	♦ Master's/Doctoral degree	2.7	0.7
Occupation	♦ Unemployed	1.8	4
	♦ Homemaker without income	54.5	30.3
	♦ Freelancer	6.2	4.7
	♦ Student	1.8	10.6
	♦ Entrepreneur	15.2	17.2
	♦ Employee in private company	12.5	29.2
	♦ Civil servant/army/police	6.2	1.5
	♦ Farmer/fisherman	0	0.7
	♦ Others	1.8	1.8
	♦ No income	48.2	29.1
Monthly Income	♦ <Rp2.500.000	10.7	17.5
	♦ Rp2.500.001-Rp5.000.000	38.4	44.4
	♦ Rp5.000.001-Rp10.000.000	2.7	8.7
	♦ > Rp10.000.000	0	0.4

RESULTS

Results of the Pre-Test Study

Pre-test study was conducted to test the validity and reliability of the extension equity measurement instrument. In this study, the validity testing was carried out both at the dimension level and the extension equity. The results showed that all indicators have a correlation value greater than 0.5 and are significant at 5 percent, either at the dimension level or the extension equity. Additionally, the results of fac-

tor analysis demonstrated that each indicator has a factor loading greater than 0.5. Hence, the results confirm that the instrument to measure the extension equity is valid. In other words, these findings suggest that every indicator in the instrument accurately reflects the construct it was designed to measure, indicating strong content and construct validity. The results of the validity test are shown in Table 2.

Furthermore, an instrument is reliable if the analysis results show that the obtained Cronbach's Alpha, Spearman-Brown Coefficient, and Guttman Coefficient values are greater than 0.6.

Table 2: The results of validity tests

Dimensions/Indicators		Item-to-total correlation		Factor analysis	
		Dimensions	Extension equity	Dimensions	Extension equity
<i>Awareness</i>					
AW1	I have heard of "ABC" before	0.746	0.660	0.775	0.661
AW2	I know the aim and the purpose of "ABC"	0.783	0.677	0.822	0.678
AW3	I can promptly recognize the symbol or the logo "ABC"	0.759	0.533	0.723	0.513
AW4	I can easily imagine "ABC" in my mind	0.808	0.629	0.780	0.611
<i>Knowledge</i>					
KN1	I have knowledge related to "ABC"	0.832	0.590	0.834	0.569
KN2	I have more knowledge of "ABC" compared to my friends	0.867	0.566	0.880	0.546
KN3	I have more knowledge of "ABC" compared to my friends	0.787	0.691	0.772	0.682
<i>Perceived Benefit</i>					
PB1	Enrolling in "ABC" is beneficial for me	0.822	0.693	0.807	0.697
PB2	Following "ABC" is my way of keeping healthy	0.892	0.652	0.908	0.658
PB3	Following "ABC" helps me manage my health	0.793	0.679	0.792	0.681
<i>Perceived Quality</i>					
PQ1	Overall, the quality of "ABC" is good	0.786	0.672	0.794	0.670
PQ2	"ABC" is a high-quality health extension program	0.883	0.700	0.900	0.703
PQ3	"ABC" has a superior health extension material	0.822	0.676	0.831	0.680
PQ4	"ABC" is professionally executed	0.694	0.710	0.654	0.710
<i>Attitude</i>					
AT1	"ABC" is a positive health extension program	0.784	0.712	0.757	0.711
AT2	"ABC" is a good health extension program	0.908	0.788	0.907	0.793
AT3	I am pleasant with "ABC"	0.866	0.733	0.878	0.737
AT4	I like that "ABC" exists	0.816	0.709	0.832	0.715
<i>Trust</i>					
TR1	"ABC" is a trusted health extension program	0.828	0.735	0.827	0.740
TR2	"ABC" can be trusted to help citizens maintain their health	0.899	0.747	0.905	0.748
TR3	"ABC" is an integrated health extension program	0.818	0.667	0.813	0.667
<i>Commitment</i>					
CM1	I am proud that I am a part of "ABC"	0.741	0.667	0.733	0.674
CM2	I am committed to support "ABC"	0.858	0.685	0.864	0.690
CM3	I have a strong relationship with "ABC"	0.890	0.732	0.892	0.735
CM4	I care with the success of "ABC"	0.820	0.731	0.819	0.735
<i>WoM</i>					
WM1	I recommend "ABC" to others	0.918	0.807	0.912	0.813
WM2	I relay positive words about "ABC"	0.962	0.832	0.964	0.842
WM3	I tell my friends and relatives to enroll in "ABC"	0.955	0.824	0.959	0.835

Note: "ABC" is the name of the extension program (for example, GERMAS Program)

Based on the analysis, each dimension has a reliability value above 0.6 across all types of reliability analyses. Therefore, the results demonstrate that an instrument to measure the extension equity is reliable. In other words, these findings imply that this instrument is reliable for assessing perceptions of equity in extension programs. Table 3 shows the results of the reliability analysis.

Results of Main Study

The goodness-of-fit of the model was tested using SEM. The criteria included NFI (normed fit index), NNFI (non-normed fit index), CFI (comparative fit index), IFI (incremental fit index), and RFI (relative fit index). Based on those criteria, this study found that the model has passed the goodness-of-fit criteria. In all criteria, the goodness-of-fit values were above the cut-off (>0.9), which means the model is confirmed by the data. The results of the goodness-of-fit test are shown in Figure 2.

SEM can also be used to test the validity and reliability of this model. Figure 2 shows that the standardised factor loadings for all indicators fell above 0.5 and significant at 5 percent, except for AW1 (0.48 at 5%). Though AW1 loading (0.48) slightly fell below 0.5, the researchers retained it due to strong item-total correlation, fulfilled factor analysis, and theoretical relevance to brand recognition metrics (Aaker 1996). However, all dimensions have fulfilled these thresholds, which implied that the model has satisfied the criterion for convergent validity. The composite reliability for each dimension was also satisfactory since they were above 0.6. Moreover, all dimensions also have an AVE value greater than 0.5. This means that each con-

struct in the model has met the criteria for convergent validity. Based on those results, this study concluded that each construct is well represented by its observed variables, and that the overall model is both valid and reliable for evaluating the concept of extension equity.

DISCUSSION

In the literature, most existing evaluation frameworks predominantly emphasise program inputs, activities, and implementation processes (for example, Martens et al. 2025; Giancola 2025; Connolly et al. 2025), while giving limited attention to how programs are perceived and experienced by their intended users. In health extension contexts, users face higher perceived risks and information asymmetry, making cognitive and emotional interpretations of program value more critical than procedural correctness alone. This study develops an extension equity model as a user-based evaluation framework, particularly in the health sector. Referring to equity concepts, such as brand equity (Aaker 1991; Keller 1993), extension equity is defined as a set of values that represent the strength of an extension program's position from a user perspective. In other words, the user-centred evaluation approach is particularly relevant for health extension programs, where the success of interventions largely depends on users' perceptions. By emphasising the users' perspective, this approach ensures that program assessment reflects the actual value and impact experienced by the community. The higher the equity value of a program, the stronger the positive perception of users towards the program, which can ultimately encourage changes in user behaviour. This finding supports the user-centred evaluation

Table 3: The results of reliability tests

<i>Dimensions</i>	<i>Cronbach Alpha</i>	<i>Spearman-Brown Coefficient</i>	<i>Guttman Coefficient</i>	<i>Composite Reliability</i>	<i>AVE</i>
Awareness	0.77	0.60	0.60	0.97	0.55
Knowledge	0.77	0.69	0.62	0.98	0.74
Perceived Benefit	0.78	0.71	0.63	0.98	0.70
Perceived Quality	0.80	0.69	0.69	0.99	0.65
Attitude	0.86	0.80	0.80	0.99	0.66
Trust	0.80	0.74	0.66	0.95	0.57
Commitment	0.84	0.80	0.80	0.98	0.56
WoM	0.93	0.94	0.83	0.98	0.75

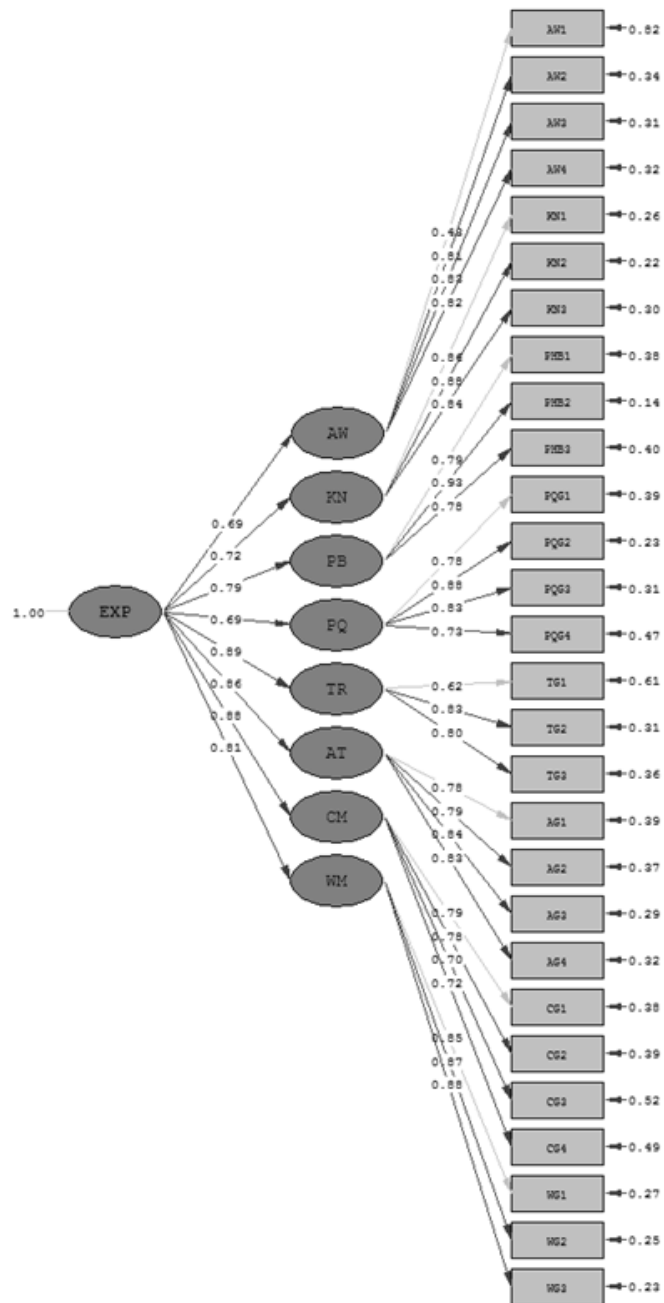


Fig. 2. The result of Structural Equation Modelling

NFI= 0.91; NNFI = 0.91; CFI = 0.92; IFI = 0.92; RFI = 0.90

Note: EXP = Extension Equity Program; AW = Awareness; KN = Knowledge; PB = Perceived Benefit; PQ = Perceived Quality; TR = Trust; AT = Attitude; CM = Commitment; WM = WoM

approach that has been widely studied previously, such as Picardi and Caruso (2024), Bastardo et al. (2024) and Moghayed (2025).

This study provides a significant theoretical contribution to the study of health education through the development of extension equity concept oriented towards user perceptions. The importance of placing users at the centre of health extension evaluation is also supported by Lloyd et al. (2021) and Ravaghi et al. (2023). This study proves that extension equity is a multidimensional model. It strengthens the findings of previous studies, such as Cho et al. (2024), Hollands et al. (2024), Hyun et al. (2024), and Petretto et al. (2024). Further, empirical testing results indicated that extension equity has eight dimensions of awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and WoM. These dimensions may not function independently; rather, they appear to form a hierarchical structure, where awareness and knowledge act as foundational dimensions, while commitment and WoM represent higher-order behavioural manifestations of extension equity (see Fig. 1). In the context of health extension, the operational definitions of each dimension are presented in Table 4.

The developed extension equity model has been proven valid and reliable. It also meets the goodness-of-fit criteria. It is suitable for use as a comprehensive evaluation tool for extension programs. These findings are supported by several previous studies that have identified similar

dimensions in user-based value measures, such as awareness (Keller 1993; Aaker 1992; Pappu et al. 2005; Buil et al. 2008; Tong and Hawley 2009; Pinar et al. 2014), knowledge (Keller 1993; Tolba and Hassan 2009; Shuv-Ami 2016), perceived benefit (Keller 1993), perceived quality (Aaker 1993; Bamert and Wehrli 2005; Pappu et al. 2005; Buil et al. 2008; Tong and Hawley 2009; Pinar et al. 2014), attitude (Keller 1993; Tolba and Hassan 2009; Shuv-Ami 2016), trust (Aaker 1996; Raut et al. 2019; Shen et al. 2018), commitment (Aaker 1991; Alwi et al. 2016), and WoM (Mourad et al. 2011; Florek 2015).

This study enhances the theoretical framework for evaluating extension programs by offering a user-based equity framework. Evaluation using this approach not only assesses the program's success from the perspective of implementers but also considers the perceived value of the program to users. This approach aligns with equity theory, which emphasises the importance of perceived fairness in the exchange of information and services as a factor influencing individual attitudes and behaviour in the long term (Polk et al. 2022).

The significance of these findings lies in providing a new evaluative perspective that prioritises user experience of health extension, an aspect often overlooked in conventional evaluation frameworks. It demonstrates that users' experiences with health extension programs can be empirically measured and linked to the overall effectiveness of such programs. This study

Table 4: The definitions of each dimension of extension equity in health contexts

S. No.	Dimensions	Definitions
1	<i>Awareness</i>	Users' perceptions that they can recognise the identity of a health extension program
2	<i>Knowledge</i>	Users' perceptions of how much knowledge they were getting from the health extension program.
3	<i>Perceived benefit</i>	Users' perceptions of the benefits gained from the health extension program
4	<i>Perceived quality</i>	Users' perceptions of the performance of the health extension services provided to them
5	<i>Attitude</i>	Users' perceptions of whether a health extension program is beneficial or not
6	<i>Trust</i>	Users' perceptions related to their willingness to rely on a health extension program for as a reliable source for healthier living.
7	<i>Commitment</i>	Users' perceptions related to their readiness to engage with the health extension program over time and take an active role in its goals
8	<i>WoM</i>	Users' perceptions related to their willingness to recommend the health extension program to others

bridges the gap between the theoretical construct of equity and its practical application within the context of health extension. Furthermore, the validated extension equity model contributes to the refinement of extension evaluation methodologies by emphasising users' psychological and behavioural indicators as key determinants of program success. By explicitly capturing users' responses, the extension equity model clarifies the mechanisms through which extension programs generate value at the user level. This perspective moves evaluation beyond static assessments of program delivery and towards a dynamic understanding of how perceived value translates into sustained behavioural change, particularly in health extension contexts characterised by high uncertainty and information asymmetry.

Based on the findings of this research, the researchers suggest that the extension program should be evaluated for its performance by taking users' perspectives into account. The evaluation based on the users' perspective can adopt the extension equity scale. In the health sector, several practical implications emerge from this study. For extension program managers, especially within health institutions, this model can serve as a strategic reference for evaluating ongoing and completed health extension programs. Managers can comprehensively assess how the health extension program is perceived and whether it creates long-term behavioural and attitudinal changes among beneficiaries. It would allow management to gather information regarding the awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and WoM. Managers can use this model to track behavioural and attitudinal outcomes across the eight dimensions, refine strategies based on user feedback, and make the program more effective through performance-based evaluation. The results can also be used as inputs to improve the performance of an extension program.

Second, for the extension agents, particularly community health educators, this model can be used as a guideline in conducting the program. Health extension agents can use this framework to monitor the ongoing programs based on the dimensions so that they understand users' development along the way. Third, for funding bodies and policymakers, this model offers

measurable criteria to assess the performance and sustainability of health extension programs. It can be used as a criterion of whether an extension program is going to be continuously funded or stopped. This model is an alternative performance evaluation tool for extension programs based on users' perspectives.

CONCLUSION

This study developed and empirically tested the extension equity model as a user-based evaluation framework for health extension programs. This study proved that the model has an acceptable goodness-of-fit value, and is valid and reliable. This study concludes that the extension equity has multidimensional constructs. It consists of eight dimensions, namely awareness, knowledge, perceived benefit, perceived quality, attitude, trust, commitment, and WoM. These eight dimensions can be used to measure the extension equity scale (EES). It offers a more effective way of assessing extension programs by capturing user perceptions of equity, ultimately leading to more accurate evaluations and improved program outcomes.

Even though this research has generated interesting findings, there are still limitations. First, the model was only tested in the context of the health extension program, which means that the findings may not be directly generalisable to other types of extension programs, such as agricultural, educational, or community development initiatives. Future studies are therefore encouraged to apply and validate the model in different extension contexts to examine its broader applicability and robustness across sectors. Second, the data were collected through convenience sampling, which may not fully represent the broader population. Therefore, this could affect the external validity of the study's findings, limiting their applicability to different contexts. Future research could employ non-probability sampling techniques, allowing the ESS to be generalised more broadly.

RECOMMENDATIONS

This study has highlighted a few areas that could benefit from further exploration. Firstly, it would be great to expand the EES beyond just

health-related programs to include other sectors, like agriculture, education, and environmental sustainability. Doing so would help see how relevant and adaptable the scale is across different areas. Another important step for future research would be to use more representative sampling methods, such as random or stratified sampling. This would make the findings more generalisable and applicable to a wider group of people. Finally, long-term studies could potentially provide useful information. Keeping track of how user views on equity develop over time could help one learn more about the long-term effects of outreach activities.

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