The CVR was calculated using Lawshe’s (1975) formula as the following:

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| Where,  ne is the number of experts identifying an item as “essential”  N is total number of experts  N / 2 is the half the total number of experts |

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| --- | --- | --- | --- | --- | --- |
| Questionnaire items | No of agreement | | | CVR | Decision |
| Not essential | Useful but not essential | Essential |
| PERCEIVED COMPETENCE |  |  |  |  |  |
| I feel I am capable of performing activities in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel I am competent in SPECTRUMx module | 2 |  | 3 | 0.2 | Remove |
| I feel I am improving my knowledge and skills in using SPECTRUM |  |  | 5 | 1 | Retain |
| I feel I am satisfied with my ability to perform all activities in SPECTRUMx module |  |  | 5 | 1 | Retain |
| After completing SPECTRUMx module, I feel that I have mastered basic skills in SPECTRUM |  |  | 5 | 1 | Retain |
| I think that I am pretty good in SPECTRUMx | 1 | 2 | 2 | -0.2 | Remove |
| PERCEIVED AUTONOMY |  |  |  |  |  |
| I feel free to decide what to do for myself in SPECTRUMx module | 2 |  | 3 | 0.2 | Remove |
| I feel free to decide which learning materials to choose based on my true interests and values in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel free to do things in my own way in SPECTRUMx | 2 |  | 3 | 0.2 | Remove |
| I feel free to express my ideas and opinions in SPECTRUMx module |  |  | 5 | 1 | Retain |
| When I participate in SPECTRUMx module, it is because I myself, want to participate, not because of outside pressures. |  |  | 5 | 1 | Retain |
| I feel free from outside pressures in SPECTRUMx module | 1 | 1 | 3 | 0.2 | Remove |
| I feel I can be myself in SPECTRUMx module |  |  | 5 | 1 | Retain |
| PERCEIVED RELATEDNESS |  |  |  |  |  |
| I feel supported by other users in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel that I am understood in SPECTRUMx module. | 2 |  | 3 | 0.2 | Remove |
| I feel that I am a valuable person to others in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel like I belong and that other people care what I have to say and do in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel I belong and the people in SPECTRUMx module care about me. | 1 | 2 | 2 | -0.2 | Remove |
| I feel connected with other users in SPECTRUMx module |  |  | 5 | 1 | Retain |
| I feel a sense of intimacy with the people I spent time with in SPECTRUMx module | 2 |  | 3 | 0.2 |  |
| PERCEIVED ENJOYMENT |  |  |  |  |  |
| I find gamification activities (eg: badges, points, level up, leaderboard) in SPECTRUMx module interesting |  |  | 5 | 1 | Retain |
| I find gamification activities (eg: badges, points, level up, leaderboard) in SPECTRUMx module enjoyable |  |  | 5 | 1 | Retain |
| I find gamification activities (eg: badges, points, level up, leaderboard) in SPECTRUMx module fun |  |  | 5 | 1 | Retain |
| I find gamification activities (eg: badges, points, level up, leaderboard) in SPECTRUMx module exciting |  |  | 5 | 1 | Retain |
| I find gamification activities (eg: badges, points, level up, leaderboard) in SPECTRUMx module pleasant. |  | 2 | 3 | 0.2 | Remove |
| PERCEIVED USEFULNESS |  |  |  |  |  |
| SPECTRUMx module improves my job performance |  |  | 5 | 1 | Retain |
| SPECTRUMx module increases my job productivity |  |  | 5 | 1 | Retain |
| SPECTRUMx module increases my job effectiveness |  |  | 5 | 1 | Retain |
| I find gamification useful in the SPECTRUMx |  | 2 | 3 | 0.2 | Remove |
| Using gamification in the SPECTRUMx makes it easier for me to start learning |  | 2 | 3 | 0.2 | Remove |
| Using gamification in the SPECTRUMx is useful for purposes of learning |  | 2 | 3 | 0.2 | Remove |
| The gamification activities (eg: badges, points, level up, leaderboard) enable me to complete SPECTRUMx module more quickly |  |  | 5 | 1 | Retain |
| ATTITUDE |  |  |  |  |  |
| I find using gamification in SPECTRUMx module as a wise thing to do |  |  | 5 | 1 | Retain |
| I find using gamification in the SPECTRUMx to be a good idea. |  | 2 | 3 | 0.2 | Remove |
| I find using gamification in SPECTRUMx module to be a positive thing |  |  | 5 | 1 | Retain |
| I find using gamification in the SPECTRUMx to be favourable |  | 2 | 3 | 0.2 | Remove |
| If I had the choice, I would choose to complete SPECTRUMx module in which gamification was used |  |  | 5 | 1 | Retain |
| If I had to vote, I would vote in favour of using gamification in the SPECTRUMx |  | 2 | 3 | 0.2 | Remove |
| I am enthusiastic about using gamification in SPECTRUMx module |  |  | 5 | 1 | Retain |
| PERCEIVED EASE OF USE |  |  |  |  |  |
| Learning to use SPECTRUMx would be easy for me | 1 | 2 | 2 | -0.2 | Remove |
| I find it easy to do what I want to do in SPECTRUMx | 1 | 2 | 2 | -0.2 | Remove |
| My interaction with SPECTRUMx module is clear and understandable |  |  | 5 | 1 | Retain |
| I would find SPECTRUMx to be flexible to interact with |  |  | 5 | 1 | Retain |
| It is easy for me to become skilful at using SPECTRUMx |  |  | 5 | 1 | Retain |
| I find SPECTRUMx easy to use |  | 2 | 3 | 0.2 | Remove |
| Using SPECTRUMx interface does not require a lot of mental effort |  |  | 5 | 1 | Retain |
| BEHAVIOURAL INTENTION |  |  |  |  |  |
| Assuming I had access to the gamification in the professional development training module, I intend to use it. |  | 2 | 3 | 0.2 | Remove |
| Given that I had access to the gamified professional development training module, I predict that I would use it in the future |  |  | 5 | 1 | Retain |
| I intend to continue using gamified professional development training module in the future |  |  | 5 | 1 | Retain |
| I will always try to use gamified professional development training module |  |  | 5 | 1 | Retain |
| ﻿I plan to continue to use gamified professional development training module at every opportunity in the future |  |  | 5 | 1 | Retain |

The CVI is the means of ﻿the mean of the CVR values for all items meeting the CVR threshold of 0.78 and retained for the final instrument. Thus, CVI for the research instrument is the 0.9 and acceptable.