more effective if there are inclusive innovation goods and services available in the markets for the recipients to purchase.

Another major trend observed currently, is in the communication sector, where computing, ICTs, communication networks, and media content are becoming increasingly highly interlinked. This trend has led to all aspects of life increasingly being conducted over interactive digital media environment and multitude of networked devices.

[30] (p.18-19) highlighted; "Convergence requires media companies to rethink old assumptions about what it means to consume media, assumptions that shape both programming and marketing decisions. If old consumers were assumed to be passive, the new consumers are active. If old consumers were predictable and stayed where you told them to stay, then new consumers are migratory, showing a declining loyalty to networks or media. If old consumers were isolated individuals, the new consumers are more socially connected. If the work of media consumers was once silent and invisible, the new consumers are now noisy and public."

According to [31], convergence can be view from four dimensions;

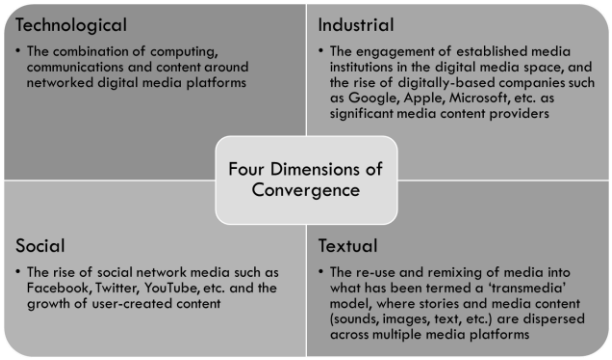

Fig. 1. Four Dimensions of Convergence.

Caution is needed in terms of how the trend is framed - digital lifestyle, modern family, the new consumer, etc. - as there is a real risk of the convergence evolution being non-inclusive. If convergence ends up a privilege enjoyed by the sophisticated, urban and IT haves, the effects of technological/digital divide will be more severe, disenfranchising more among the society and placing a nation's development as a whole at risk.

Thus, this study propose to explore the level of inclusive innovation adoption in converged telecommunications as perceived by industry players in Malaysia as well as their attitudes towards the idea using Ajzen's theory of planned behavior (TPB). TPB was developed by Ajzen in 1988 and later refined in subsequent works [32 – 34]. The theory of planned behavior is a theory which predicts deliberate behavior, because behavior can be deliberative and planned. The theory proposes a model which can measure how human actions are guided. It predicts the occurrence of a particular behavior, provided that behavior is intentional. The model outlines three variables which the theory suggests will predict the intention to perform behavior. The variables are attitudes (Att) - the respondents' attitudes towards inclusive innovation, subjective norms (SN) - the respondents own estimate of the social pressure to adopting inclusive innovation, specifically; beliefs about how other people, who may be in some way important to them, would like them to behave, and perceived behavioral controls (PBC) - is the extent to which the respondents feel able to enact the adopting inclusive innovation behavior. The intentions (Int) are the precursors of behavior, in other words, it is the cognitive representation of a respondents' readiness to adopting inclusive innovation, and it is considered to be the immediate antecedent of behavior.

II. Research Design

This study comprised of several stages. First a group of executives from major telecommunication companies and agencies were solicited to take part in the study. Next, the group was given an exposure to the various aspects of convergence via a series of masterclasses. They were then introduced to the concept of inclusive innovation. Next, each participant was asked to consider the various convergence products/services being offered in the markets and evaluate its inclusiveness. The measure for this is the inclusive innovation index (III), developed from operationalizing the definition of inclusive innovation by the Global Research Alliance. Inclusive innovations are defined along the lines of five dimensions [12]:

- Affordable Access (AA) – "Such inclusive innovation will have to be aimed at `extreme reduction' in both the costs of production as well as the distribution." Key elements for this dimensions are; l) significant reduction of production costs to enable affordable price, and ll) significant reduction of distribution costs to enable affordable price.
- Sustainable Business (SB) – "This means that in the long term, the 'affordable access' must not depend on the government subsidies or generous government procurement support systems but should work by retaining the market principles with which the private sector works comfortably." Thus the key elements are; l) not dependent on government subsidies, ll) not dependent on significant government procurement, lll) not dependent on charity and CSR, and lV) a sustainable business model.
- High Quality (HQ) – "It is because we have to recognize the basic rights of the people at the base of the pyramid, who should be enjoying the more or less the same level of quality of basic services as people at the top of the pyramid." The elements are; l) meeting quality standards, ll) do not sacrifice quality to bring down the costs, and lll) comparable quality level with those of similar products available in the market
- Excluded Population (EP) – "The excluded population or the disenfranchised or commonly marginalized groups which could include the poor, the disabled, the migrants, the women, the elderly, certain ethnic group, and so on." The elements; l) designed for the poor, the disabled, the migrants, the women, the elderly, certain ethnic group, and so on, ll) priced with the poor in mind, and lll) distribution designed to ensure accessibility for the poor, the disabled, the migrants, the women, the elderly, certain ethnic group, and so on.
- Massive Outreach (MO) – "If the `true inclusion' has to

happen then the benefits of inclusive innovation should reach a large scale, i.e. a significant portion of population, and not just a small section of the population (in many cases, the total target population may only be a few hundreds of thousands or a few million- and not necessarily hundreds of million)." The key elements; l) large market size, ll) large market share, and lll) reached sizeable percentage of the target market.

From the five dimensions, based on the definitions and the key elements identified from the definitions, 19 survey items were developed for the III. Following table provide the list of items.

TABLE I
ITEMS FOR INCLUSIVE INNOVATION INDEX

Dimension	Item
AA	• The production costs are significantly low compared to established industrial standard • The distribution costs are significantly low compared to established industrial standard • The products/services are priced affordably low compared to established industrial standard
SB	• The businesses offering the products/services are not dependent on government subsidies • The businesses offering the products/services are not dependent on significant government procurement • The businesses offering the products/services are not dependent on a single major client • The businesses offering the products/services are not dependent on social funding (charity or corporate donations) • There is a long term demand for the products/services • Eventhough the products/services are designed for the commonly marginalized groups it is appealing to the mass market as well
HQ	• The businesses offering the products/services ensures the products/services meet all relevant quality standards • The businesses offering the products/services don't sacrifice quality to bring down the costs • The businesses offering the products/services ensure any cost reduction does not compromise the quality • The products/services' quality is comparable with those of similar but higher priced products available in the market
EP	• The products/services are designed for the commonly marginalized groups such as the poor / bottom 40% / disabled / migrants / women / elderly / minority groups / etc • The products/services are priced affordably; with the poor / bottom 40% in mind • The distribution channels are designed/selected to ensure the products/services are accessible by the commonly marginalized groups such as the poor / bottom 40% / disabled / migrants / women / elderly / minority groups / etc
MO	• There is a large market potential for the products/services • The products/services already have a large share of the target market • The products/services have reached more than 50% of the target market

Their intention towards inclusive innovation is then gauged via a survey develop based on Ajzen's TPB. The findings are presented in the following sections.

III. FINDINGS

A total of 30 executives took part in the study. Among them, 17 (56.7%) were males while the remaining 13 (43.3%) were females. The age ranged from 20-24 to 45-49 years old. Out of the 30, 12 (40%) have Master degrees, and 18 (60%) have Bachelor degrees. The participants had a mean of 9.43 years work experience with their current organization, ranging from first year to the 22nd year. Furthermore, 29 (96.7%) of them claimed that their organization do their own R&D and product development.

Reliability analysis was conducted to determine the internal reliability of the items used to measure the constructs tested in this study. According to [35], Cronbach's Alpha is a reliability coefficient that indicates the extent to which the items are positively correlated to one another. Cronbach's Alpha greater than 0.70 is deemed as good [36]. All of the constructs were considered as reliable and good as the Cronbach's Alpha were above 0.70 (see Table II).

TABLE II
RELIABILITY ANALYSIS

Constructs	N	Items Mean	Std. Dev.	Cronbach's Alpha	No. of Items
Att	30	4.272	12.70754	0.982	6
SN	30	5.258	4.55982	0.722	4
PBC	30	4.775	4.49022	0.729	4
Int	30	5.725	4.95044	0.926	4
III	30	5.174	10.87278	0.802	19

A total of 37 items were used to measure the main constructs of the study, namely III (19 items), Att (6 items), SN (4 items), PBC (4 items) and Int (4 items). The items were measured by itemized rating scale with seven scale categories. Mean analysis was conducted to determine the average mean of the constructs.

Generally, the respondents agreed with all the items measuring the constructs with overall Int achieved the highest level of agreement with an average of 5.7250 and median of 6.000; while overall Att scored the lowest with an average of 4.2722 and median of 4.7500. Meanwhile, overall PBC achieved a mean of 4.7750 and median at 4.500. Overall SN achieved the second highest mean of 5.2583 and median at 5.1250. The respondents rated a moderate level of agreement on inclusiveness of convergence goods currently available in the markets with overall III of 5.1737 and median at 5.2895, suggesting that there is still the need to produce more inclusive convergence goods. The overall Int mean being the highest gives a good indication of the industry players in Malaysia intending to adopt inclusive innovation when developing goods and services for their customers in the future.

The above was further confirmed when each participant was asked whether they think that it is important for the industry to develop inclusive convergence goods and services, with a mean of 6.03 and median at 6.0. The group also agrees that such goods or services can also be appealing to the mass market (mean 5.13 and median 6.0). The group in general reported being unable to identify specific inclusive convergence goods or services or policies specifically designed to promote the development of such goods (mean

4.73 and 5.13 respectively).

Comparing the means between the male and female participants shows some marked difference in their overall attitude towards inclusive innovation with the male participant showing a lower mean than female suggesting less than favorable attitude towards inclusive innovation in the context of their industry. However, when asked on their intention to adopt inclusive innovation in their business (the participants were asked to assume that they have the authority to decide), both gender recorded higher mean from their initial attitude, with male executives recording higher intention than their females colleagues.

The respondents were regrouped into two generations – younger (10, 33.3%) and older (20, 66.7%) – with the age 35 years old being the threshold age. Similar comparative analysis done according to gender earlier was carried out according to the generations. There are some marked differences between the two groups with the younger generation recording higher means for attitude, subjective norms and intention. On the other hand, the older recorded higher means for PBC and III. See Table III below for the full means comparison.

TABLE III
COMPARING MEANS

Constructs	Male	Female	Younger	Older
Overall III	5.1796	5.1661	5.0526	5.2343
Overall Att	3.7549	4.9487	4.4333	4.1917
Overall SN	5.1324	5.4231	5.4750	5.1500
Overall PBC	4.8529	4.6731	4.6750	4.8250
Overall Int	5.8235	5.5962	5.9500	5.6125

The comparative analysis was also conducted in terms of how the groups responded on the questions on i) whether they think that it is important for the industry to develop inclusive convergence goods and services, ii) whether such goods or services can also be appealing to the mass market, iii) ability to identify specific inclusive convergence goods or services, and iv) ability to identify policies specifically designed to promote the development of such goods.

The female respondents in general recorded higher means on all four questions than their male counterparts. The younger respondents of the group recorded higher means on the first two questions than their older colleagues and the pattern was flipped on the last two questions, with the older group recorded higher means. See following Table IV for the full means comparison.

TABLE IV
COMPARING MEANS

Constructs	Male	Female	Younger	Older
Important	6.0000	6.0800	6.4000	5.8500
Mass Market	4.9400	5.3800	5.5000	4.9500
Goods/Services	4.4700	5.0800	4.4000	4.9000
Policies	5.1200	5.1500	5.0000	5.2000

IV. DISCUSSIONS

The findings indicated that the Malaysian communications industry players moderately agreed on the inclusiveness of the convergence goods currently available in the markets. However, when asked further, the participants largely unable to identify specific goods and policies for the production of inclusive convergence goods. Thus, the earlier moderate agreement might be more of an optimistic and hopeful perception on the side of the participants. The findings also showed positive indications towards inclusive innovations among the participants where the group showed a good level of agreement on the importance and potential of inclusive convergence goods and services. Even though, when considering inclusive innovations in the context of their businesses, the participants showed poor attitude towards it, they then reported more positive response in terms of intention to adopt inclusive innovations if the authority to take the decision is theirs. This suggests that more exposure and promotions need to be done by the government to increase the level of awareness and understanding of inclusive innovations within the industry. Development of inclusive convergence communications goods and services should be incentivized, with success stories being shared and celebrated. The Inclusive Innovation Index (III) developed for this study serves as a useful tool that can be used to help get this movement under way.

The differences observed in the responses between the genders and generations suggest there most likely different appreciations and behaviors towards inclusive innovation according to gender and age. This hypothesis seems to be supported by some previous reports and researches. In the Mobile Behavior Report 2014 by Salesforce Inc. [37], in terms of gender, females were ahead of males in smartphone ownership. Similar differences were reported in reports by CEOWORLD Magazine in 2014 [38] and by Intel in 2013 [39], where females were reported to lead in;

- installing mobile apps
- purchasing apps
- willingness to pay more for the apps
- playing mobile games.

Furthermore, according to a report by Deloitte in 2014 [40], the older generations in developed countries showed significant growth in smartphone ownership and high mobile apps download rate. However, in a report by Pew Research Centre also in 2014 [41], IT adoption rate among the older generation was still lagging behind that of the younger generations. Furthermore, studies have shown that the younger generations tend to have higher self-efficacy in IT [42].

However, it is not possible to deduce conclusively on the differences among gender and age groups based on the findings of this study due to the small sample size.

Next, this study should be implemented with a larger sample size in order to gain better insights to the true state. The design of the research project would need to be refined for practical purposes. The masterclasses would be hard to be replicated when dealing with larger sample size. Thus, the content from the masterclasses need to be condensed and presented in formats that would suit a survey study. It is

proposed that a short informative tutorial video is produced which can be included as the introductory portion of the online survey. A textual version should also be produced and presented as leaflets to be provided along with the paper-based survey. The survey participants should include all stakeholder groups of the communications sector. Differences in the findings among the different stakeholder groups should be explored and implications discussed to generate comprehensive recommendations.

V. CONCLUSIONS

The convergence trend will continue to be the major driving trend in the communications sector. The trend is fueled by rapid development of various related technologies, which then spur more innovative sparks that will continue to take the trend into wider aspects of human lives.

Innovation capacity is thus the critical factor for organizations to ensure their continued performance and competitiveness. Malaysian organizations need to develop their ability to become global trailblazers; not to be complacent and satisfied to only follow global trends, nor banking on continued government protection of domestic players.

It is important to recognize the directions the convergence evolution is taking and to plan for the various infrastructure as well as policy needs. Readiness is crucial in order to be in step with the technological progress and market expectations.

The findings from this study suggest differences in attitude towards inclusive innovation may exist due to gender and age. However, the findings from this study are not sufficient for a conclusive argument. What is clear is that such lines of investigations are worth exploring and may bear some interesting findings. Comparison between the generations should be expanded beyond the simplistic division of young and old. Generation X, Y and millennials may behave and perceive inclusive innovation differently.

Furthermore, caution is needed in terms of how we frame the trend. Digital lifestyle, modern family, the new consumer, etc.; there is a risk of making the convergence evolution non-inclusive.

If convergence ends up a privilege enjoyed by the sophisticated, urban and IT haves, the effects of technological/digital divide will be more severe, disenfranchising more among the society and may put the nation's development as a whole at risk.

Some may still argue that ensuring inclusion is not the responsibility of the private sector. However, earlier studies have argued it otherwise. Armed with insights provided from studies such as this, ensuring the inclusiveness of convergence should be an agenda promoted by the government and implemented by the industry.

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Kamarulzaman Ab. Aziz is currently an associate professor and the Director of the Entrepreneur Development Centre at Multimedia University, member of the Centre of Excellence for Business Performance (CeBP) and the Centre for Knowledge & Innovation Management (CEKIM), and was the Deputy Dean (R&D) of the Faculty of Management, Multimedia University. He was also the founding president of the AKEPT Young Researchers Circle (AYRC). His research interest includes Cluster Development, Technology and Innovation Management, Entrepreneurship and Commercialization.