

# USER PREFERENCES IN FINTECH APPLICATIONS: GARRETT RANKING ANALYSIS IN A DEVELOPING ECONOMY CONTEXT

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## Abstract

This study investigates user preferences and challenges while using Fintech applications within a developing economy context using Garrett's ranking methodology. This study surveyed 194 well-educated respondents with a view to understanding desirable features as well as issues encountered during Fintech usage. Application of Garrett's methodology resulted in counter-intuitive findings such as multilingual interfaces ranking as the most desired feature, ahead of preferences such as easy refunds and additional authentication. On the issues front too, usability ranked highest among reported problems. These findings are contrary to expectations based on the sample's educational background and digital usage characteristics. This study uses Garrett's ranking technique to convert ordinal data into normalized scores, providing a novel methodological approach yielding contrarian findings within Fintech user research. These findings could have significant implications for Fintech application design in developing economies and raise questions about the relationship between educational language policies and technology preferences, which could be an area for further research.

**Keywords:** Fintech Adoption, Garrett Ranking Methodology, User Preferences, Usability of Fintech.

## 1. INTRODUCTION

Surveying customers and users for getting inputs from them on quality of service and their preferences has long been established. Many researchers have devised methods for surveying customers and obtaining inputs since the advent of modern industry in the first quarter of the 20<sup>th</sup> century. The purpose of surveys is to be able to choose a sample of respondents from a large population and study relationships between variables such as age, gender, income, education and beliefs, opinions, attitudes and behavior. In his book on behavioral research, (Kerlinger, 1966) states, "Survey research studies large and small populations by selecting a sample population from which the relative incidence and interrelationship of sociological and psychological variables are investigated." Subsequent researchers have studied different types of surveys, culminating in web surveys, that have become popular after the advent of the internet. These provide surveyors with access to a very large number of respondents, but may not guarantee participation by respondents. Couper carries out a comprehensive review of different types of web surveys and issues associated with them (Couper, 2000). Findings from this study indicate that web surveys span a wide range of non-probabilistic and probabilistic approaches and these provide an opportunity for really moving the survey industry into the 21<sup>st</sup> century.

Researchers (Kenett and Salini, 2011) have studied models for analyzing customer surveys and according to them self-declared or interview-based surveys are a prime research tool in many application areas such as social science research, marketing, service management, risk management and customer satisfaction management. They further state that customer satisfaction is a key dimension driving business outcomes and performance of processes in service and Product organizations.

Fintech is a rapidly growing area with many entrepreneurial ventures as well as large corporations trying to create new products and services aimed at providing technology based financial services to a large number of customers. Fintech is a relatively new industry, which thus far, does not have a universally accepted definition. A large number of researchers have studied the area and many definitions exist, however, a couple of definitions from scientific literature can be proposed. (Schueffel, 2016) has carried out an extensive review seeking to arrive at an acceptable definition of Fintech and has proposed a definition, "*Fintech is a new financial industry that applies technology to improve financial activities.*" An industry focused definition is provided by (Ernst and Young, 2019), which states the definition as, "*Organizations combining innovative business models and technology to enable, enhance and disrupt financial services.*"

Survey methodologies are frequently used in research to understand user preferences in the Fintech industry; a select few researchers have indeed used a survey-based approach to gain insights in the Fintech domain, particularly in developing economies. (Buckley and Webster, 2016), conducting research on Fintech in developing countries, concluded that Fintech product and service developers in advanced economies often understand how difficult many customers find their journey with banks to be and they have been able to make the journey more pleasant and seamless in developed economies. However, when products and services are being designed for customers in developing countries, product designers need to rely on an evidence-based assessment of customer needs and wants, which can only be done by implementing questionnaires and interviewing local people who will be potential customers for the products and services.

Most studies use a questionnaire with suitable scales and respondents choose the most appropriate response; data obtained is used for statistical analysis and researchers draw conclusions from the analysis. One of the alternative methods that can provide researchers reliable outcomes uses a ranking based approach that converts ranks to percent positions on the Normal Curve. This approach is proposed initially in the work Statistics in Psychology and Education, (Garrett, 1953), and is called the Garrett ranking method. Respondents are asked to rank alternatives on an ordinal scale and the data are then used to create a ranking using an approach that assumes normality of distribution in the population; this approach ensures that ranks like 1 or 2, that are at the extreme end of the scale get a weightage in line with their positions on a Normal Curve.

This approach has been used by a wide variety of researchers in diverse fields of study, however, its application in the area of Fintech, as evidenced by a review of existing literature, appears to be limited.

This empirical study uses the Garrett ranking approach and attempts to discover features of Fintech applications that end users in a developing economy would prefer to have implemented in applications; this study also looks at user rankings of common problems encountered by consumers of Fintech industry. The features and impediments discovered by the study will serve as useful inputs for providers of Fintech services and creators of products in this domain.

## **2. LITERATURE REVIEW**

This literature review examines diverse uses of Garrett ranking in scientific literature and analyzes studies on the use of this methodology for discovering customer adoption of Fintech where questionnaires have been used for obtaining customer inputs. The review concludes by examining specific studies that have used the Garrett ranking method in a Fintech context.

There are many studies using Garrett's ranking technique in the scientific literature, spanning diverse domains. (Oyelaran et al., 2017) used Garrett's method for ranking the causes and symptoms of stress among workers in a mat factory in Nigeria. A study was undertaken by (Surywanshi, 2013) on employee talent management, which showed that talent management ranked among one of the most difficult tasks facing managers in an organization.

A study using Garrett ranking, combined with logistic regression was carried out by (Agarwal & Kapoor, 2020) to identify the drivers of employee attrition and rank them by order of importance. Industrial problems in India were investigated by (Aleeswari et al., 2019), with a view to prioritizing them for remediation. (Nirmala & Suhasini, 2013) researched on factors and constraints related to hybrid rice cultivation.

Garrett's ranking technique has proved its efficacy in helping researchers rank and address critical factors in their own fields. However, examples of its application in the context of Fintech are not so widespread. In the ensuing, this study examines research on customer preferences in the Fintech domain; concluding with specific research studies that have adopted Garrett's ranking technique in Fintech.

## **3. UNCOVERING CUSTOMER PREFERENCES IN FINTECH**

(Hu et al., 2019) obtained 387 responses to a questionnaire and analyzed the data using structural equation modeling (SEM). This study concluded that users' trust in Fintech services significantly influenced their attitude towards adoption. Perhaps surprisingly, their findings indicated that perceived ease of use and perceived risk did not affect users' attitudes toward adoption of Fintech services.

(Al Nawayseh, 2020) collected data from 500 potential users of Fintech in Jordan for structural equation modeling (SEM-PLS). The structural equation model showed that perceived benefits and social norms significantly influenced the intention to use Fintech applications, while perceived technology risks did not have a significant effect.

(Senyo & Osabutey, 2020) used the Unified Theory of Acceptance and Use of Technology-2 (UTAUT2) developed by (Venkatesh & Davis, 2000) and the Prospect Theory propounded by (Kahneman & Tversky, 2013) in conjunction with SEM-PLS to study antecedents for usage of Fintech.

Their analysis of data from 294 respondents revealed that performance and effort expectancy had significant relationship with the intention to use Fintech innovations. However, price value, hedonic motivation, social influence and perceived risk had no significant influence on the intention and use of mobile money services.

(Abu Daqar et al., 2020) investigated the perception of Millennials and Gen Z in Palestine toward Fintech services. Data was collected through an online questionnaire and subsequent analysis demonstrated that reliability and ease of use were the main drivers helping adoption. A large majority (85%) of both generations were found to trust banks; this study recommended that banks to digitize their financial services to drive business volumes.

(Setiawan et al., 2021) studied user innovativeness as a predictor of Fintech adoption in Indonesia. Path modelling showed that innovativeness and user attitude were significant predictors of adoption. Financial literacy was found to be the least important predictive variable.

Logistic regression by (Mahmud et al., 2023) on survey data from more than 1000 Fintech users in Bangladesh using a Likert scale (Jebb et al., 2021) demonstrated that Fintech service providers and regulators should focus on customer perception in driving Fintech adoption. This study concluded that the design of intervention programs should primarily be based on customer perception of obstacles and customer concerns on security, privacy, and financial fraud issues.

(Koziel & Shen, 2023) studied demographics and psychographics of customers to delineate user segments and profiles that prefer mobile Fintech services over traditional banking. Their analysis suggested that service providers should implement effective trust-enhanced strategies to increase adoption.

(Zhang et al., 2023) utilized the Technology Acceptance Model (TAM) proposed by (Davis, 1989) on the basis of survey data from banking customers in Pakistan. The study investigated the effect of perceived ease of use (PEU), perceive usefulness (PU) and data security (DAS) on adoption intention of Fintech services. Fintech promotion (FP) and customer trust (CT) were also included in their study. A Partial Least Squares Structural Equation Model (PLS-SEM) analysis showed that DAS, PEU, PU, FP, CT have positive and significant influence on adoption intention of Fintech services. PEU, DAS, PU were also positively and significantly related to trust.

Customers' perception about DAS and PEU additionally positively and significantly influenced their perception about the importance of FP. On the other hand, FP has an insignificant effect on CT and PU also has insignificant effect on FP.

(Roh et al., 2024) carried out a survey of Fintech services customers to test hypotheses on customer adoption of Fintech. Their study demonstrated that consumers' perceived security and privacy are positively related to consumers' trust in such services, which in turn increases the intention to use. This study suggested that managers in Fintech firms must actively assess the extent to which consumers trust their Fintech service offerings.

The studies above have two common characteristics: the use of a questionnaire to collect primary data and use of sophisticated statistical modeling. Models such as a Structural Equation Model (SEM) require knowledge of specialized statistics and cannot, in general, be independently carried out by people in industry.

Garrett's approach provides an alternative, viable method for ranking preferences. This approach can be supplemented by sophisticated statistical analysis when required. The following section examines specific studies using this methodology in a Fintech context.

#### **4. SPECIFIC STUDIES ON THE USE OF GARRETT'S TECHNIQUE IN FINTECH**

(Haritha et al., 2022) studied benefits, motivators, challenges and problems faced in Indian Fintech Services. Using Garrett's ranking method, their analysis showed that a favorable demographic profile of respondents helps in adopting Fintech.

Challenges faced by Fintech services included, lack of support from the government, customer protection and difficulty in changing the mindset of merchants. Motivators identified included ease of setting up accounts, effectiveness of service quality, continuous access to service, availability of innovative products, positive online experience and functionality. Factors impeding Fintech adoption among farmers was examined by (J et al., 2024) using Garrett ranking. This examination showed that risk aversion and a preference for cash transactions were significant obstacles to the adoption of Fintech. Technological challenges included restricted access to technical support and complicated user interfaces. Concerns about trust, particularly around scams and fraud, were identified as significant barriers, highlighting the need for robust security measures.

(Amudha et al., 2024) carried out a primary survey followed by Garrett ranking to examine the perception of Gen X toward mobile commerce. Their findings showed security control to be the primary factor impeding M-commerce service adoption, followed by safety of users, limited knowledge about the technology and lack of technical support.

The reviewed literature demonstrates the versatility of the Garrett ranking methodology in different domains of research. A few instances of specific studies in Fintech are cited and the paucity of application of this approach within the Fintech domain appears to be a gap. Opportunity exists for widening its application to emerging Fintech domains and longitudinal studies could be carried out to track changing user preferences in different

economic contexts. The methodological approach of using Garrett's ranking in the present context is detailed in the next section.

## 5. METHODOLOGY

This study used a questionnaire to collect inputs from users of Fintech on the rank that they assign to features that they would prefer to see introduced in Fintech applications; the study simultaneously collected from these respondents a ranking of problems and issues that they observed while using these applications in their daily lives. During the development of the questionnaire, features and problems chosen for ranking were pre-validated using expert opinion; academic opinion was sought on formulation of statements. The wordings of the questionnaire were then refined by pre-testing on a small sample of known respondents followed by one-to-one feedback on potential improvement. In the final questionnaire, a text box was also provided for respondents to input their comments and observations.

## 6. SAMPLE OF RESPONDENTS AND COMPUTATION APPROACH

Questionnaires were distributed using electronic media to the target user population; the aim was to obtain as many responses as possible. Respondents were asked to answer demographic questions and rank their preferences on 6 features of Fintech applications as well as 6 problems that they faced while using these applications. The study employed Simple Random Sampling, with each respondent having an equal probability of answering the questionnaire. Respondents were requested to fill in demographic details with the name field being made a non-mandatory input to enhance security of personal data. Respondents were instructed to assign rank 1 to the most wanted feature and 6 to the least wanted. The ranking of issues and impediments that they experienced in the course of using these applications had a similar ranking scheme. 194 responses were received to this questionnaire, of which 28 were found deficient. These were deemed unfit for inclusion in the analysis and only 166 were finally accepted into the set of validly filled responses.

Exploratory analysis of data was carried out using a Python program that was custom developed for visualization and computation of Garrett ranks from the raw data. The procedure followed for computation of Garrett scores followed the broad steps below:

- Computation of percent position for each rank.
- Finding the Garrett value for each percentage position
- Tabulating the frequency of rank data for each feature or issue
- Finding the weighted sum and the average Garrett values (GV)
- Identifying the overall rank by setting features or impediments in descending order of average GV

The underlying steps and the approach to research using Garrett ranking is explained in detail in the next sub-section.

## 7. GARRETT RANKING METHOD

As briefly explained in the introduction, Garrett ranking is done by asking respondents to rank alternatives on an ordinal scale. The method has been well explained by its proponent in (Garrett, 1953) in the chapter on The Scaling of Mental Tests and Other Psychological Data. Most questionnaires admit of several possible replies, typically the question may have four or five answers one of which is to be checked by the respondent.

It is often desirable to "weight" these different selections in accordance with the degree of divergence from the "typical answer" which they indicate. In case these replies are in the form of a rating, a numerical value provided to these ratings can render them comparable from respondent to respondent, provided that we make the assumptions that (a) the trait being measured is Normally distributed in the population and that (b) all respondents are equally capable of ranking the alternatives provided.

With the assumptions of normality of distribution and equal capability of each respondent, it is possible to convert a rank into a "score."

This score can then be directly compared to find the relative position of each trait. If, for example, we want to test the trait "selling capability" of 15 salespersons, we can find a "score" for each salesperson by ranking them ordinally on a scale of 1 to 15 with 1 representing the most capable sales person and 15 the least capable salesperson.

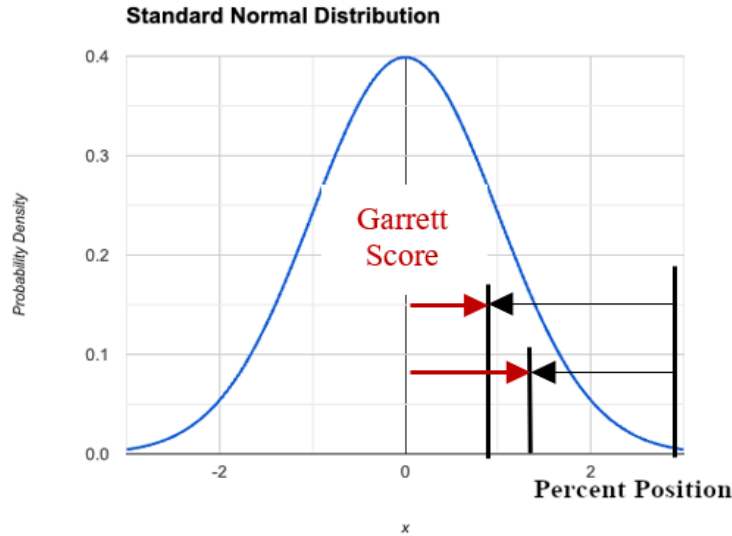
If we can assume that "selling capability" follows the normal probability curve in the general population we can assign to each salesperson a "selling score" on a scale of 10 or of 100 points. We first find the percent position on the Normal curve for each rank, using the formula:

$$\text{Percent Position} = \frac{100(R - 0.5)}{N}$$

R is the rank of the individual being ranked; N is the number of individuals ranked. The percent position obtained can be converted to a score on a scale of 100 using a Garrett Ranking conversion table. An abridged table is shown in Table 1.

A Garrett conversion table works on the principle of scoring based on the distance along the horizontal axis of a standard normal distribution for a given percentage score. These scores will therefore increase with a decreasing percent position.

This principle can be well understood from Figure 1, which shows the approach adopted for scoring in a Garrett table.



**Figure 1: Principle of scoring in Garrett ranking (Source: Authors)**

The percent position increases with decreasing rank; the score allocated in the Garrett table keeps increasing with decreasing rank.

**Table 1: Garrett ranking conversion table-abridged (Source: Garrett, 1953)**

Percentage	Score	Percentage	score
5.51	81	56.03	47
15.44	70	65.75	42
25.48	63	74.52	37
34.25	58	85.75	29
45.97	52	95.08	18
30.61	60	100.00	0
34.25	58		

If a survey of a large number of respondents, say  $Z$  respondents were to be carried out, then the overall score would be found by multiplying the Garrett scores of the ranks assigned to each salesperson by the frequency of respondents assigning a particular score. These would then be summed for each salesperson and finally divided by  $Z$  to find the average score for each salesperson; ultimately the rank of each salesperson would be decided by this average score. Carrying out this procedure will yield a better result than just a frequency distribution of rankings as the Garrett method will assign relatively higher weights to the highest-ranking salespersons and the relative difference in scores at the high end of the ranks will be significantly higher than that at the middle of the ranks. This can be better understood from Table 2 which shows the way this procedure is carried out for 15 salespersons, with  $R$  being the number of respondents in the survey and the last column on the right showing the simple arithmetic average of the weighted sum for each person denoted by  $S_{\text{person\_number}}$ .



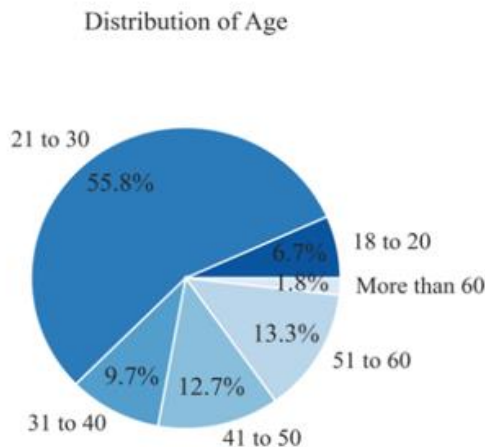
**Table 2: Computation table for determining overall rank  
(Modified from Garrett, 1953)**

Salesperson	Rank 1 GV = 85		Rank 2 GV = 75		...		Rank 15 GV = 15		Sum $\Sigma f \times GV$	Average Score
	f	f x GV	f	f x GV	...	...	f	f x GV		
Person 1	20	1700	34	34 x 75	...	...	10	150	S <sub>1</sub>	S <sub>1</sub> /R
Person 2	40	3400	10	10 x 75	...	...	0	0	S <sub>2</sub>	S <sub>2</sub> /R
Person p	12	1020	14	14 x 75	...	...	20	300	S <sub>p</sub>	S <sub>p</sub> /R
Person 15	50	4250	30	30 x 75	...	...	1	15	S <sub>15</sub>	S <sub>15</sub> /R

The final ranks of salespersons are obtained by using the Average score of each person taken is descending order with the most effective salesperson at the top of the order.

## 8. DATA ANALYSIS, DISCUSSION AND RESULTS

An exploratory analysis was conducted with a view to understanding the demographic variables within the sample. A pie chart by age, shown in Figure 2 shows that around 62% of the respondents were young - in the age group 18 to 30 years, which is in keeping with the distribution of population in the country where this study is carried out. 35% of the respondents were in the age group of 31 to 60 years which slightly over-represents their proportion in the country's population, due primarily to the respondents' bias in this group; many recipients of the questionnaire in this group have a tendency not to respond. The group above 60 years was again slightly under-represented due to fewer users of Fintech in this age group.



**Figure 2: Distribution of respondents by age (Source: Primary Data)**

Figure 3 shows the distribution by gender of respondents and it shows that female respondents are slightly under represented. This may reflect the pattern of usage of Fintech applications or could be the effect of multiple other sociological factors affecting response rates of different genders and may be a separate area of study.

Distribution by Gender

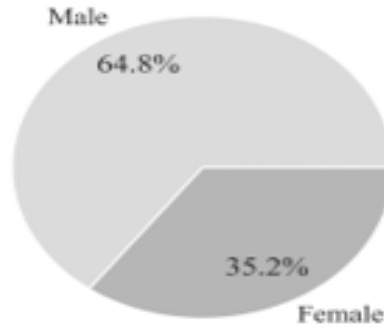


Figure 3: Distribution of respondents by gender (Source: Primary Data)

Figure 4 represents the distributions of income and education side by side. It is clear that most of the respondents are highly educated with the maximum proportion having obtained a Masters level education, to be followed by a Bachelors level of education. This distribution of income is negatively correlated with the findings from Garrett ranking, which is discussed subsequently. Most of the respondents declare being dependent and have no independent income. This ties in with the distribution of age which shows around 70% of the respondents in the 18 to 30 years age bracket.

Income and Education

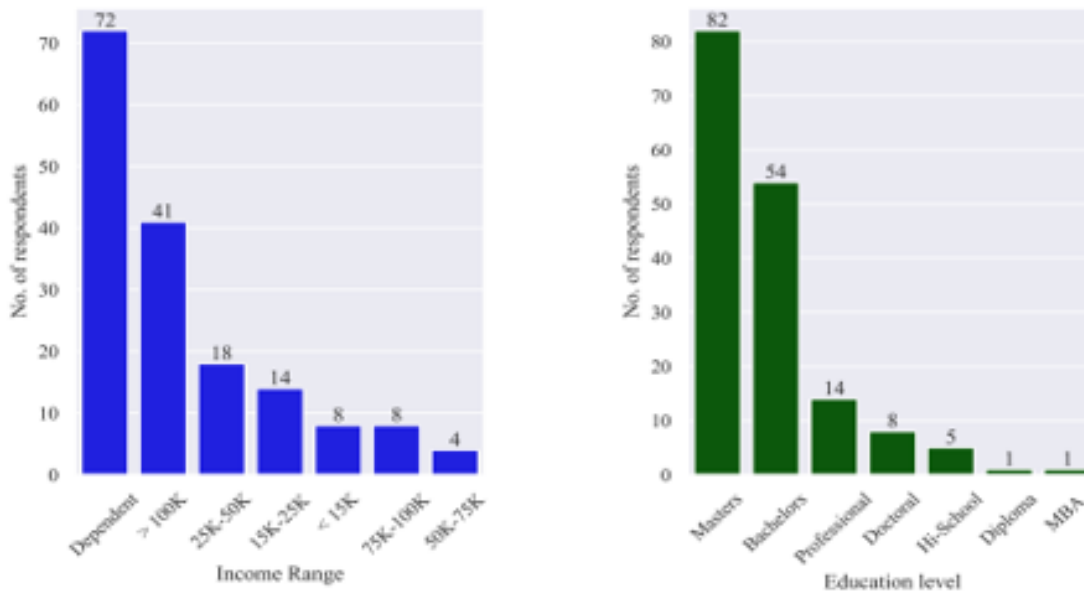


Figure 4: Distribution of income and education level of respondents (Source: Primary data)

Table 3 provides a view of the computation for preferences of respondents. This tabulates the observed number of respondents assigning different ranks to each of the features that were to be ranked.

Analysis showed that respondents rank interface in multiple languages as the most desired feature. This finding is incongruent and presents an unexpected relationship between the educational background of the respondents and their preference of user interface. With the medium of educational instruction being English for most of the respondents; one would think that respondents would have been perfectly happy with an application interface in English. The feature ranked second is “Immediate Overdraft”, this is again slightly surprising, though it can still be explained by referring to the fact that many respondents are students and they may therefore have need for immediate money. The others ranks, except for the last one, appear to be consistent with the pattern of thinking of the respondent population in a developing economy. The features “Easy Refund” and “Easy Disabling” should have ranked higher in the opinion of the authors, given the risk aversion exhibited in general by the population.

**Table 3: Feature ranking by consumers of Fintech (Source: Primary data)**

	Weighted Sum	Mean Score	Overall Rank
<b>Features</b>	<b>No. of respondents</b>		<b>166</b>
<b>Easy Refund</b>	7641	46.03	<b>5</b>
<b>Multiple Languages</b>	9005	54.25	<b>1</b>
<b>Additional Authentication</b>	8017	48.30	<b>3</b>
<b>Easy Disabling</b>	7271	43.80	<b>6</b>
<b>Immediate Overdraft</b>	8758	52.76	<b>2</b>
<b>Status on App</b>	8013	48.27	<b>4</b>

Table 4. presents the ranking of common issues and problems encountered by consumers of Fintech applications. A detailed look at the ranking of problems and issues also helps understand the ranking of features better. As pointed out, it is surprising that “Easy Refund” as a feature rank so low on the consumers’ preference. However, we observe that the ranks of the issues “Transfer Failed” or “Wrong Transfer” are low in the list of observed issues and problems; this partly explains why the refund feature is not as important to consumers as it should have been when viewed in isolation.

**Table 4: Problems and issues ranked by customers (Source: Primary data)**

	Weighted Sum	Mean Score	Overall Rank
<b>Problem/ Impediment</b>	<b>No. of respondents</b>		<b>166</b>
<b>App Slow</b>	9005	54.25	<b>4</b>
<b>Transfer Failed</b>	8311	50.07	<b>6</b>
<b>Difficult Usage</b>	9455	56.96	<b>1</b>
<b>Wrong Transfer</b>	9345	56.30	<b>3</b>
<b>No Confirmation</b>	8687	52.33	<b>5</b>
<b>Insurance Disapproved</b>	9391	56.57	<b>2</b>

## 9. CONCLUSION

This study presents some remarkable findings that may go against established thought about user interfaces and desired features amongst Fintech users. Since most of the respondents are well educated, in a country where the medium of higher education is English, and society exhibits a certain level of risk aversion the researchers had expected that the highest-ranking feature would relate to refunds, additional authentication or disabling of the application. The results, however, accord the highest rating to an interface in multiple languages with easy refunds and easy disabling ranking very low.

On the problems encountered, given the advanced levels of networking infrastructure, the low level of insurance penetration and the level of education of the respondents, the researchers had expected that difficult usage, insurance disapproved and app slow would have ranked low on the list of problems encountered. However, the results show a completely different picture, which is counter-intuitive.

## 10. GAPS AND FURTHER RESEARCH POSSIBILITIES

This study uses the Garrett ranking method to sample respondents in a relatively small geographic region of a developing country for their preferences related to Fintech applications and their perceptions on problems encountered when using these applications. The results from the study are seen to be counter-intuitive.

The researchers believe that a more comprehensive view can be obtained by extending this study to include focus group discussions and qualitative inputs from individual interviews with representatives from each demographic sub-section of the sample frame.

The results of this study also call into question the efficacy of the use of English as a medium of instruction for higher studies, in view particularly of the fact that many respondents do not use English as a primary means of instruction in primary and secondary education. The results, furthermore, point out a need for designers of Fintech applications to relook at the ease of use of their applications. These could well form the topics of separate, focused research efforts in future.

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